CCD-TR350E

SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model
Russian Model
Tourist Model

10x
SONY
AF CCD
Video 8
Handycam
POWER

Video8
Handycam

A MECHANISM

For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL IV" (9-973-199-11).

SPECIFICATIONS

System

Video recording system	Two rotary heads, Helical scanning FM system
Audio recording system	Two rotary heads, FM system
Video signal	PAL colour, CCIR standards
Usable cassette	8 mm video format cassette (standard 8 mm)
Tape speed	SP mode: Approx. 2.0051 cm (13/16 inches)/s LP mode: Approx. 1.0058 cm (13/32 inches)/s (playback only)
Recording time	SP mode: 1.5 hours (P5-90)
Playback time	SP mode: 1.5 hours (P5-90) LP mode: 3 hours (P5-90)
Fastforward/rewind time	Approx. 6 min 30 s (P5-90)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder monochrome
Lens	Combined 10 x Power zoom lens f = 6.2 to 62 mm (1/4 to 2 7/16 inches) F 1.6 to 2.9 (45 to 450 mm when converted to a 35 mm still camera) Filter diameter 37 mm (1 1/2 inches) TTL autofocus system inner focus wide macro system
Colour temperature	Auto
Minimum illumination	2 lx (F 1.6)
Illumination range	2 lx to 100,000 lx
Recommended illumination	More than 100 lx

Input and output connectors

Video output	Phono jack, 1 Vp-p, 75 Ω, unbalanced, sync negative
Audio output	Phono jack, –7.5 dBs, (at load impedance 47 kΩ) Impedance less than 2.2 kΩ
RFU DC OUT	Special minijack, DC 5 V
Remote jack	Stereo mini-minijack (ø 2.5 mm)
MIC jack	Minijack, – 66 dBs low impedance with 2.5 to 3 V DC, output impedance 6.8 kΩ (ø 3.5 mm)

– Continued on next page –

8 VIDEO CAMERA RECORDER

SONY®

MICROFILM

General

Power requirements	On battery mounting surface 6.0 V (battery pack) 7.5 V (AC power adaptor)
Average power consumption	5.3 W (camera recording) including the viewfinder
Installation	Vertically, Horizontally
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	−20°C to +60°C (−4°F to +140°F)
Dimensions	Approx. 109 x 109 x 178 mm (w/h/d) (4 3/8 x 4 3/8 x 7 1/8 inches)
Mass	Approx. 760 g (1 lb 11 oz) excluding the battery pack, lithium battery and cassette Approx. 980 g (2 lb 2 oz) including the battery pack NP-55, lithium battery CR2025, cassette P5-60
Microphone	Electric condenser microphone, monaural type

AC power adaptor

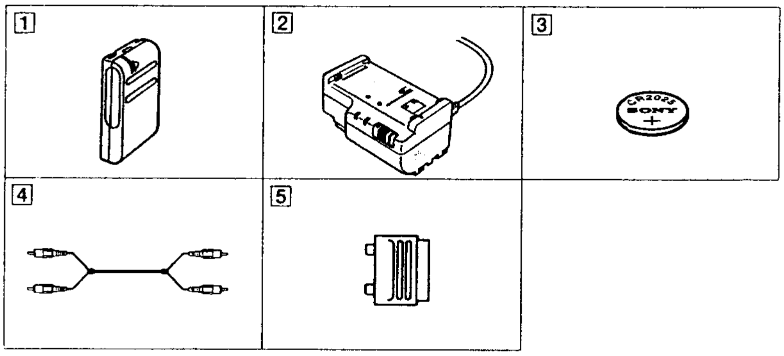
Power requirements	110-240 V AC, 50/60 Hz
Power consumption	15 W (AC-V25) / 17 W (AC-V25A)
Output voltage	DC OUT: 7.5 V, 1.2 A (AC-V25) 7.5 V, 1.5 A (AC-V25A) in operating mode Battery charge terminal: 10 V, 1.1 A in charge mode
Application	Sony battery packs NP-55/55H, NP-66/66H, NP-77H/77HD
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	−20°C to +60°C (−4°F to 140°F)
Dimensions	Approx. 103 x 49 x 63 mm (w/h/d) (4 1/8 x 1 15/16 x 2 1/2 inches) including projecting parts and controls
Mass	Approx. 290 g (10 oz) (AC-V25) Approx. 320 g (11 oz) (AC-V25A)

Design and specifications are subject to change without notice.

Note

This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

Supplied accessories



1 **NP-55 Battery pack** (1)

2 **AC-V25/V25A AC power adaptor** (1)

3 **CR2025 Lithium Battery (Installed in the camcorder)** (1)

4 **A/V connecting cable** (1)

5 **21-pin adaptor** (1)

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the valuesspecified.
6. Flexible Circuit board Repairing
   - Keep the temperature of the soldering iron around 270°C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

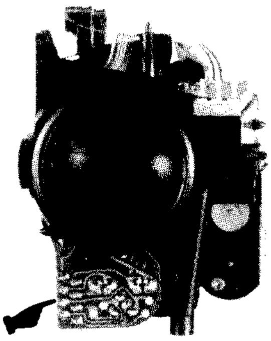
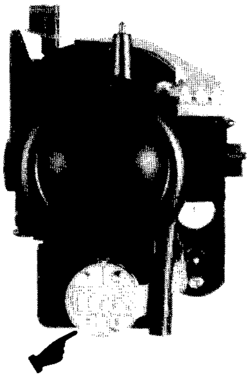
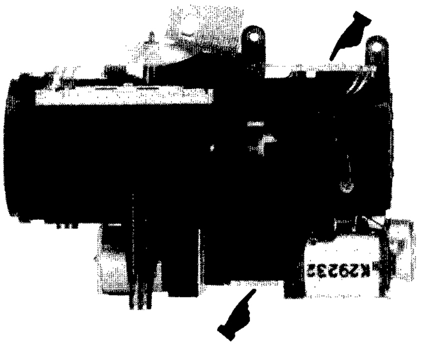
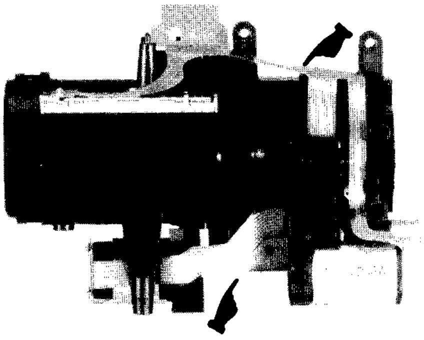
SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

【Zoom lens】

This unit employs two types of lens.
Note that the lenses are interchangeable, however their components are not.

Differentiating the lens ☛ : difference point

TYPE A (VCL-6210WC)	TYPE B (VCL-6210WF)
From the front of the lens 	From the front of the lens 
From the right side of the lens (as seen from the front) 	From the right side of the lens (as seen from the front) 

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There is the color reproduction standard frame at the back of the book.

SERVICE NOTE

[SEMICONDUCTOR FOR CORRECTION LIST DISPLAY]

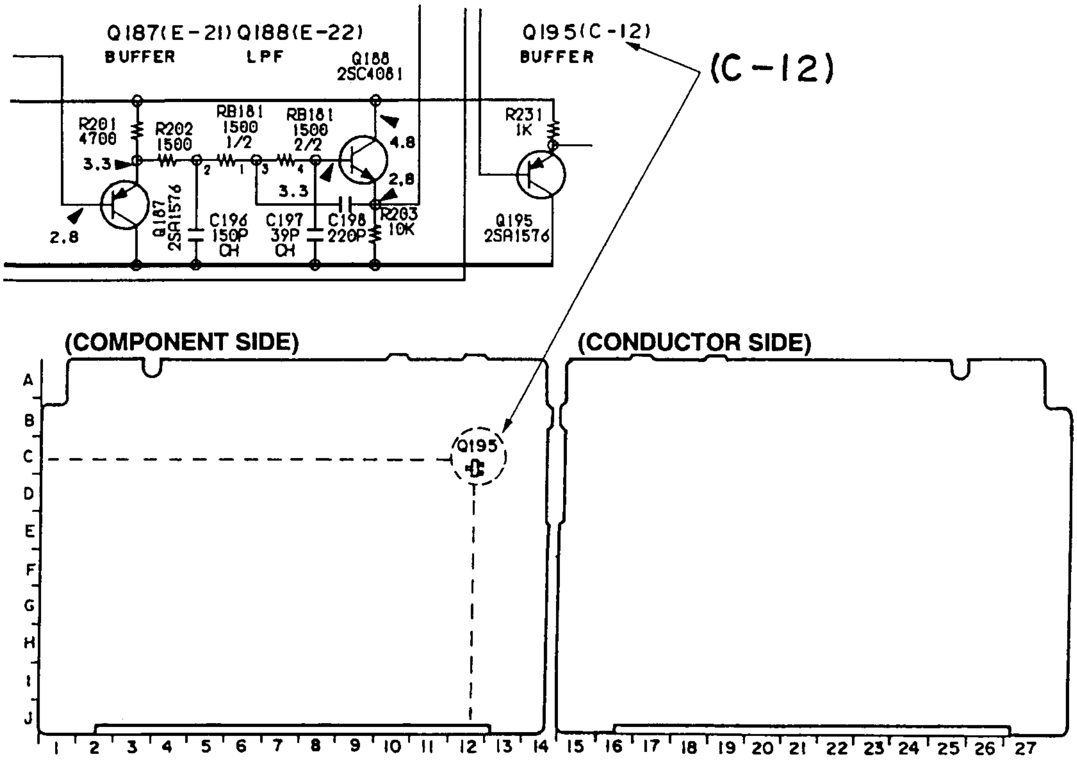
Part code and part name of the semiconductor for correction of the print board is discribed in the space of each print figure. Use this list when ordering parts.

[PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]

The parts location diagram for the power supply which are often checked and replaced when repairing the fuse and IC link and so on. (See page 96, 97 108, 109, 133 and 135.)
This diagram is useful for repair.

[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red in schematic diagrams. This enables to find the location on the board easily when servicing.


Q187(E-21) Q188(E-22)
BUFFER
LPF
Q188
2SC4081
R201
4700
R202
1500
RB181
1500
1/2
RB181
1500
2/2
3.3
4.8
2.8
3.3
2.8
Q187
2SA1576
C196
150P
CH
C197
39P
CH
C198
220P
R203
10K
Q195(C-12)
BUFFER
(C-12)
R231
1K
Q195
2SA1576
(COMPONENT SIDE)
(CONDUCTOR SIDE)
Q195
A
B
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[HEAD CLEANING]

After an extended period of use the video image may become indistinct or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

Check for Head Clogs During Recording

① Use a blank tape, record a short section, then press the stop button to stop.
② Set to recording mode again.
③ If the [✲] mark is flashing in the viewfinder at this time, head clogs are occurred.

Check During Playback of a Tape

① Play back a pre-recorded tape and display the image on a TV screen.
② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.

Remedy

[Cleaning method using a cleaning tape]

- Use the Cleaning Tape. (Please follow the instructions attached to the cleaning tape.)

Charging and Installing the Battery Pack

Carga e instalación de la batería

Before using your camcorder, you first need to charge and install the battery pack. To charge the battery pack, use the supplied AC-V25/V25A AC power adaptor.

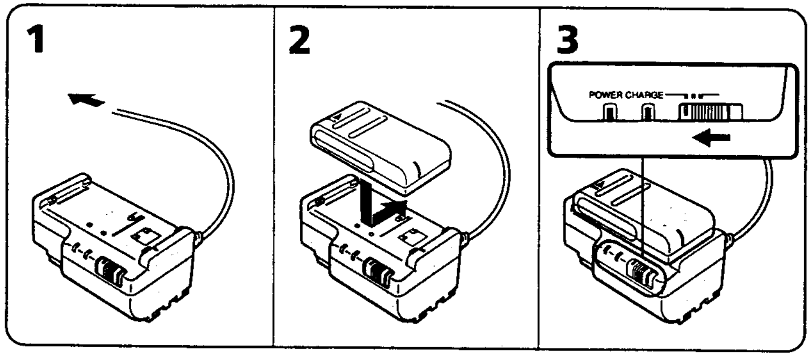
Charging the Battery Pack

Charge the battery pack on a flat place without vibration.
(1) Connect the power cord to a wall outlet.
(2) Align the right side of the battery pack with the line on the AC power adaptor, then slide the battery pack in the direction of the arrow. **(3)** Set the selector to CHARGE. Charging begins.
When charging is completed, the CHARGE lamp goes out. Set the selector to the center position and unplug the unit from the wall outlet. Then remove the battery pack and install it on the camcorder.
To stop charging, set the selector to the center position.

Antes de utilizar la videocámara es necesario cargar primero la batería y luego instalarla. Para cargar la batería, utilice el adaptador de CA AC-V25/V25A suministrado.

Carga de la batería

Cargue la batería sobre una superficie plana sin vibraciones.
(1) Conecte el cable de alimentación a una toma de corriente de la pared. **(2)** Alinee el lado derecho de la batería con la línea del adaptador de alimentación de CA y luego deslice la batería en la dirección de la flecha. **(3)** Ponga el selector en CHARGE. La carga comienza.
Al finalizar la carga, la lámpara CHARGE se apaga. Ponga el selector en la posición central y desenchufe la unidad de la toma de la pared. Luego retire la batería e instálela en la videocámara.
Para parar la carga, ponga el selector en la posición central.



Charging Time

Battery pack	Charging time*
NP-55 (supplied)	70
NP-77H/77HD	160
NP-66H	120
NP-55H	80

* Approximate minutes to charge an empty battery pack using the AC-V25/V25A. (Lower temperatures require a longer charging time.)

Battery Life

The battery life of a colour viewfinder is indicated in the parentheses.

Battery pack	Typical recording time**	Continuous recording time***
NP-55 (supplied)	30 (25)	60 (50)
NP-77H NP-77HD	75 (70)	150 (135)
NP-66H	55 (50)	110 (100)
NP-55H	35 (30)	70 (60)

** Approximate minutes when recording while you repeat recording start/stop and turning the power on/off. The actual battery life may be shorter.

*** Approximate continuous recording time indoors.

Tiempo de carga

Batería	Tiempo de carga*
NP-55 (suministrada)	70
NP-77H/77HD	160
NP-66H	120
NP-55H	80

* Minutos aproximados necesarios para cargar una batería agotada empleando el AC-V25/V25A. (Cuando la temperatura esté muy baja, el tiempo de carga aumentará.)

Duración de las baterías

La duración de la batería para el visor en color se muestra entre paréntesis.

Batería	Tiempo de grabación normal**	Tiempo de grabación continua***
NP-55 (suministrada)	30 (25)	60 (50)
NP-77H NP-77HD	75 (70)	150 (135)
NP-66H	55 (50)	110 (100)
NP-55H	35 (30)	70 (60)

** Minutos aproximados cuando se grabe repitiendo las funciones de inicio/parada y conexión/desconexión de la alimentación. La duración actual de la batería puede que sea más corta.

*** Tiempo de grabación continua aproximado en interiores.

This section is extracted from instruction manual.

Charging and Installing the Battery Pack

Important

Use the battery completely before re-charging!

Before you recharge the battery, make sure the battery has been used up (discharged) completely. Repeated charging while some capacity remains causes a lowering of battery capacity. However, the original battery capacity can be recovered if you use the battery completely and charge it fully again.

To use up the battery, remove the cassette and set the POWER switch to CAMERA with the battery attached, and leave the camcorder until the ▭ indicator and the red lamp flash in the viewfinder.

Removing the Battery Pack

Slide the battery pack in the direction of the arrow (see drawing).

Carga e instalación de la batería

Importante

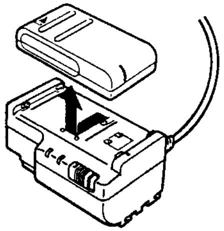
¡Emplee la batería hasta agotarla antes de volver a cargarla!

Antes de cargar la batería, asegúrese de que ésta esté completamente agotada (descargada). Si carga repetidamente la batería sin haberse agotado ésta por completo, la capacidad de la batería se reducirá. Sin embargo, la capacidad original de la batería podrá recuperarse si la emplea hasta que se agote por completo y luego vuelve a cargarla completamente.

Para que la batería se agote por completo, extraiga el videocasete y deslice el conmutador POWER hasta CAMERA estando colocada aún la batería. Deje así la videocámara hasta que el indicador ▭ y la lámpara roja parpadeen en el visor.

Extracción de la batería

Deslice la batería en la dirección de la flecha (vea la ilustración).

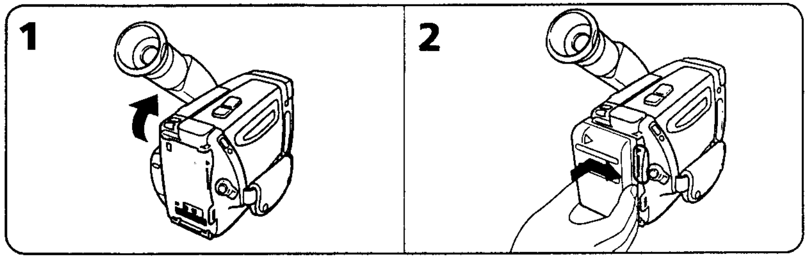


Note on charging the battery pack

- The POWER lamp will remain lit for a while even if the battery pack is removed and the power cord is unplugged after charging the battery pack. This is normal.
- If the POWER lamp does not light, set the selector to the center position and disconnect the power cord. After about one minute, reconnect the power cord and set the selector to CHARGE again.
- You cannot operate the camcorder using the AC power adaptor while charging the battery pack.

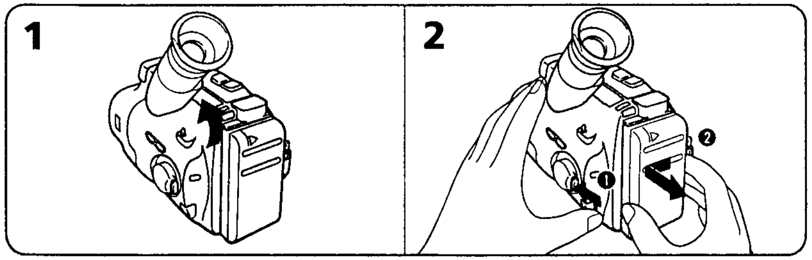
Installing the Battery Pack

(1) Lift up the viewfinder. **(2)** Align the right side of the battery pack with the white line on the camcorder, and slide the battery pack to the right.



Removing the Battery Pack

(1) Lift up the viewfinder. **(2)** While pressing BATT, slide the battery pack to the left.



Notas sobre la carga de las baterías

- La lámpara POWER permanecerá encendida durante un rato a pesar de extraer la batería y desenchufar el cable de alimentación después de cargarse la batería. Esto es normal.
- Si no se enciende la lámpara POWER, ponga el selector en la posición central y desconecte el cable de alimentación. Después de pasar un minuto aproximadamente, vuelva a conectar el cable de alimentación y ponga de nuevo el selector en CHARGE.
- Cuando esté cargando la batería no podrá utilizar la videocámara empleando el adaptador de alimentación de CA.

Instalación de la batería

(1) Levante el visor. **(2)** Alinee el lado derecho de la batería con la línea blanca de la videocámara y deslice la batería hacia la derecha.

Extracción de la batería

(1) Levante el visor. **(2)** Mientras presiona BATT, deslice la batería hacia la izquierda.

Tips for Using the Battery Pack

This section shows you how you can get the most out of your battery pack.

Preparing the Battery Pack

Always Carry Additional Batteries

Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

Battery Life is Shorter in Cold Environment

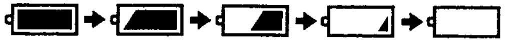
Battery efficiency is decreased and the battery will be used up more quickly if you are recording in cold environment.

To Save Battery Power

Turn STANDBY on the camcorder down when not recording to save battery power. **[a]**
A smooth transition between scenes can be made even if recording is stopped and started again. While positioning the subject, selecting an angle, or looking through the viewfinder lens, the lens moves automatically and the battery is used. The battery is also used when a tape is inserted or removed.

When to Replace the Battery Pack

While you are using your camcorder, the remaining battery indicator decreases gradually as battery power is used up.



When the remaining battery indicator reaches the lowest point, the ▭ indicator appears and starts flashing in the viewfinder. **[b]**
When the ▭ indicator in the viewfinder changes from slow flashing to rapid flashing while you are recording, set the POWER switch to OFF on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain smooth transition between scenes after the battery pack is replaced.

Sugerencias para emplear la batería

Esta sección muestra cómo sacar el mayor rendimiento de su batería.

Preparación de la batería

Lleve siempre baterías de repuesto

Prepare baterías para poder emplear la videocámara el doble o el triple del tiempo de grabación planeado.

La duración de la batería se reduce en climas fríos

La eficacia de la batería se reduce, y ésta se agotará más rápidamente, si se usa para grabar en climas fríos.

Ahorro de energía de la batería

Para ahorrar energía, mueva hacia abajo STANDBY de la videocámara cuando no grabe. **[a]**
Entre las escenas puede hacerse una transición suave a pesar de parar e iniciar de nuevo la grabación. Mientras se coloca el sujeto, se selecciona el ángulo o se mira a través de la lente del visor, la lente se mueve automáticamente y la batería se utiliza. También se usa energía de la batería al insertar o extraer una cinta.

Reemplazo de la batería

Mientras utiliza su videocámara, el indicador del estado de la batería disminuye gradualmente al utilizarse la energía de la batería.

Cuando el indicador del estado de la batería alcance el punto inferior, el indicador ▭ aparecerá y empezará a parpadear en el visor. **[b]**
Cuando el indicador ▭ del visor deje de parpadear lentamente y pase a parpadear rápidamente mientras graba, deslice el conmutador POWER hasta OFF en la videocámara y reemplace la batería. Deje la cinta en la videocámara para permitir una transición suave entre escenas después de reemplazar la batería.

Note on the remaining battery indicator

The remaining battery indicator of the camcorder may indicate a different remaining capacity from that of the battery pack with its own indicator (not supplied). The indicator of the battery pack is more accurate.

Note on the Rechargeable Battery Pack

The Battery Heats Up

During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern.

Battery Care

- Remove the battery pack from the camcorder after using the battery pack, and keep it in a cool place. When the battery pack is attached to the camcorder, a small amount of current flows to the camcorder even if the POWER switch is set to OFF, which shortens battery life.
- The battery pack is always discharging even when it is not in use after charging. Therefore, you should charge the battery right before using the camcorder.

How to Use the Switch on the Battery Pack

This switch is provided so that you can mark the charged battery. Set the switch to the "no mark" position when charging is completed. Set the switch to the "red mark" position when the battery is used up (or in whichever direction you want to remind yourself). **[c]**

The Life of the Battery Pack

The battery pack can be fully charged and discharged about 500 times under normal temperatures. If the battery indicator flashes rapidly just after turning on the camcorder with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Charging Temperature

You should charge batteries at temperatures from 10°C to 30°C (from 50°F to 86°F). Lower temperatures require a longer charging time.

Nota sobre el indicador del estado de la batería

El indicador del estado de la batería de la videocámara puede indicar una capacidad restante diferente de la indicada en la batería con su propio indicador (no suministrada). El indicador de la batería es más preciso.

Nota sobre la batería

La batería se calienta

La batería se calienta durante la carga o la grabación. Esto se debe a la energía que ha sido generada y a un cambio químico producido en el interior de la batería. Esto no debe ser motivo de preocupación.

Cuidados de la batería

- Extraiga la batería de la videocámara después de haberla utilizado y guárdela en un lugar fresco. Cuando coloque la batería en la videocámara fluirá un poco de corriente a la videocámara incluso cuando el conmutador POWER esté en OFF, lo que reduce la duración de la batería.
- La batería siempre está descargándose, a pesar de no estar siendo utilizada después de haber sido cargada. Por lo tanto, la batería debe cargarse justo antes de utilizar la videocámara.

Empleo del conmutador de la batería

Este conmutador sirve para marcar las baterías cargadas. Póngalo en la posición "sin marca" al terminar la carga. Ponga el conmutador en la "marca roja" cuando la batería esté agotada (o póngalo en la posición que más sencillo le resulte recordar el estado de la batería). **[c]**

Duración de la batería

La batería puede cargarse completamente unas 500 veces a temperaturas normales. Si el indicador del estado de la batería parpadea rápidamente justo después de encender la videocámara con una batería completamente cargada, la batería tendrá que cambiarse por otra nueva totalmente cargada.

Temperatura durante la carga

Las baterías deben cargarse a temperaturas de entre 10°C y 30°C. A temperaturas más bajas, el tiempo de carga será mayor.

Tips for Using the Battery Pack

Note on Charging

A Brand-new Battery

A brand-new battery pack is not charged. Before using the battery pack, charge it completely.

Before Recharging a Used Battery Pack

- Make sure to use up the battery before recharging.
- If recording is completed before the 🔋 indicator appears in the viewfinder, you should remove the tape, set the POWER switch to CAMERA, turn STANDBY up, and leave the camcorder until the battery indicator flashes rapidly.
- When you use the AC-S10 power adaptor or the DC-S10 car battery charger, you can use the discharging function.
- **Charging the usable battery causes a lowering of battery capacity. Battery capacity can be recovered if you fully discharge and charge the battery again.**

After Long Storage

Recharge the battery pack after a long period of storage. If the battery pack is charged fully but not used for a long time (about 1 year), it becomes discharged. Charge it again, but in this case the battery life will be shorter than normal. After several charging and discharging cycles, the battery life will recover its original capacity.

Note on the Terminals

If the terminals (metal parts on the back) are not clean, the battery duration will be shortened. When the terminals are not clean or when the battery pack has not been used for a long time, repeat installing and removing the battery pack. This improves the contact condition. Also, wipe the + and − terminals with a soft cloth or paper.

Be Sure to Observe the Following

- **To prevent an accident caused by a short circuit, do not allow metal objects such as a necklace to touch the battery terminals. Carry the battery pack attaching to the terminal cover. [d]**
- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor convert the battery pack.
- Do not expose the battery pack to any mechanical shock.

Sugerencias para emplear la batería

Nota sobre la carga

Batería nueva

La batería nueva no está cargada. Cargue completamente la batería antes de emplearla.

Antes de cargar una batería usada

- Asegúrese de que la batería esté completamente agotada antes de cargarla.
- Si la grabación termina antes de que el indicador 🔋 aparezca en el visor, la cinta deberá extraerse, el conmutador POWER deberá ponerse en CAMERA, STANDBY deberá girarse hacia arriba y la videocámara deberá dejarse encendida hasta que el indicador del estado de la batería parpadee rápidamente.
- Cuando emplee el adaptador de alimentación AC-S10 o el cargador de baterías de automóvil DC-S10, podrá emplear la función de descarga.
- **La carga de una batería que no está completamente descargada reduce su capacidad. La capacidad de la batería puede recuperarse descargándola completamente y volviéndola a cargar.**

Después de estar guardada durante largo tiempo

Cargue la batería después de haber estado ésta guardada durante largo tiempo. Si la batería se carga completamente pero no se emplea durante mucho tiempo (1 año aproximadamente), se descargará. Cárguela de nuevo, pero en este caso su duración se reducirá. Después de cargarla y descargarla varias veces, la batería recuperará su capacidad original.

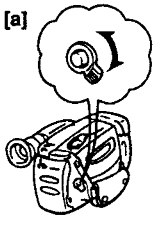
Nota sobre los terminales

Si los terminales (las partes metálicas del lado posterior) no están limpios, la duración de la batería se reducirá. Cuando los terminales no estén limpios, o cuando no haya empleado la batería durante mucho tiempo, instale y extraiga la batería varias veces. Esto mejorará el contacto. Además, frote los terminales + y − con un paño o papel suave.

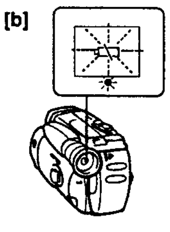
No se olvide de los puntos siguientes

- **Para evitar accidentes debidos a un cortocircuito, no permita que objetos metálicos, como por ejemplo un collar, toquen los terminales de la batería. Lleve la batería con la tapa de terminales colocada. [d]**
- Mantenga la batería alejada del fuego.
- Mantenga seca la batería.
- No abra ni altere la batería.
- No exponga la batería a ningún golpe mecánico.

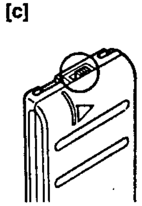
[a]



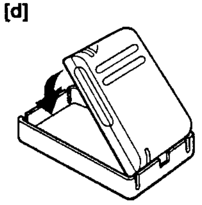
[b]



[c]



[d]

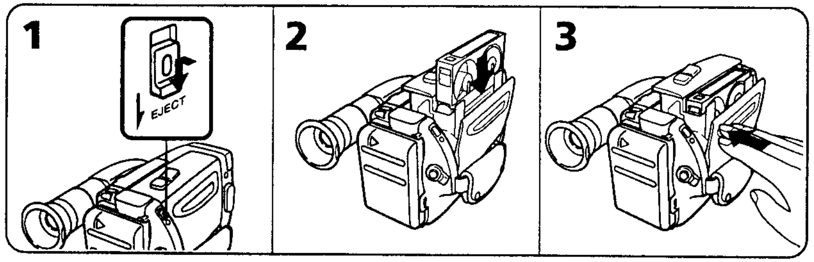


Inserting a Cassette

Make sure that the power source is installed.
(1) While pressing the small blue button on the EJECT knob, slide it down. The cassette holder automatically lifts up and opens. **(2)** Insert a cassette with the window facing out. **(3)** Close the cassette holder by pressing the "PUSH" mark on the cassette holder.

Inserción de un videocasete

Asegúrese de que la fuente de alimentación esté instalada.
(1) Mientras presiona el pequeño botón azul del pomo EJECT, deslice el pomo hacia abajo. El compartimiento del videocasete se eleva y se abre. **(2)** Inserte un videocasete con la ventanilla hacia afuera. **(3)** Cierre el compartimiento del videocasete presionando su marca "PUSH".



To Eject the Cassette

While pressing the small blue button on the EJECT knob, slide it down.

Expulsión del videocasete

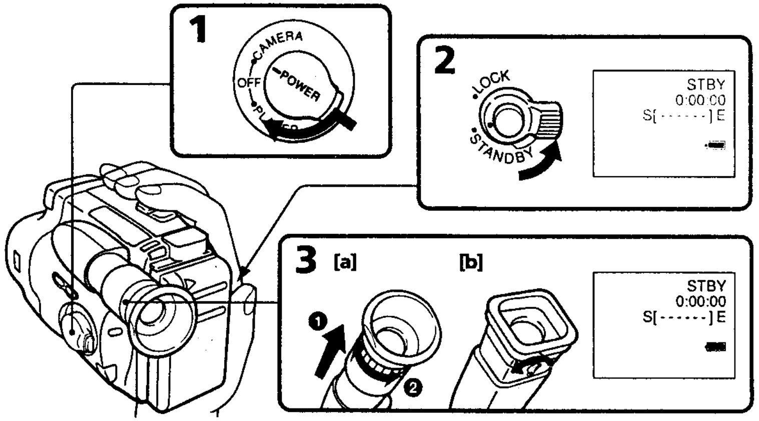
Mientras presiona el pequeño botón azul del pomo EJECT, deslice el pomo hacia abajo.

Adjusting the Viewfinder Lens

Ajuste de la lente del visor

Before you use the camcorder for the first time or after someone else has used it, focus the viewfinder lens. Make sure that the power source is attached to the camcorder.
(1) While pressing the green button of the POWER switch, turn it to CAMERA. **(2)** Turn STANDBY up. **(3)** Focus on the indicators:
[a] When using a monochrome viewfinder, pull out the viewfinder until it clicks, and turn the viewfinder lens adjustment ring so that the indicators in the viewfinder come into sharp focus. **[b]** When using a colour viewfinder, move the viewfinder lens adjustment lever so that the indicators in the viewfinder come into sharp focus.

Antes de utilizar la videocámara por primera vez o después de haberla empleado otra persona, ajuste la lente del visor. Asegúrese de que haya una fuente de alimentación conectada en la videocámara.
(1) Manteniendo presionado el pequeño botón verde del conmutador POWER, deslice el conmutador hasta CAMERA. **(2)** Gire STANDBY hacia arriba. **(3)** Ajuste la lente del visor: **[a]** Cuando utilice un visor en blanco y negro, tire del visor hasta que haga un ruido seco, y gire el anillo de ajuste de la lente del visor para que los indicadores del visor puedan verse claramente. **[b]** Cuando utilice un visor en color, mueva la palanquilla de ajuste del visor para que los indicadores del visor puedan verse claramente.



When Using a Colour Viewfinder

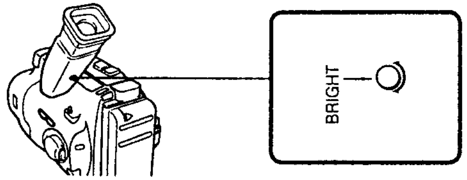
To adjust the picture quality

If you want to change brightness of the picture displayed on the viewfinder screen, turn the screw on the viewfinder slowly using a screwdriver (not supplied). To get more brightness, turn it clockwise. To get less brightness, turn it counterclockwise. You do not need to adjust it in everyday operation.

Cuando utilice un visor en color

Para ajustar la calidad de la imagen

Si usted desea cambiar el brillo de la imagen visualizada en la pantalla del visor, gire lentamente el tornillo del visor utilizando un destornillador (no suministrado). Para obtener más brillo, gírelo hacia la izquierda. Para obtener menos brillo, gírelo hacia la derecha. No necesitará ajustarlo todos los dias que utilice la videocámara.



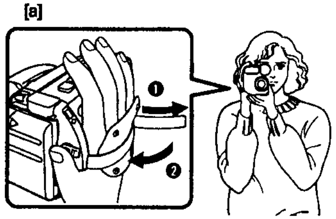
Hints for Better Shooting

Sugerencias para filmar mejor

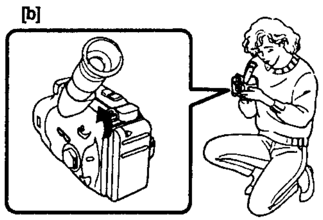
For hand-held shots, you'll get better results by holding the camcorder according to the following suggestions:

Para obtener los mejores resultados cuando filme sujetando la videocámara con la mano, sujétela de acuerdo a las sugerencias siguientes:

[a]



[b]



- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb. **[a]**
- When using the monochrome viewfinder, you can also record in a low position to get an interesting recording angle. Turn the viewfinder up for recording from a low position. **[b]**

(See next page for further information.)

- Sujete firmemente la videocámara y asegúrela con la correa de la empuñadura para poder manipular fácilmente los controles con su dedo pulgar. **[a]**
- Cuando ulitice un visor en blanco y negro, también podrá grabar desde una posición baja para obtener un interesante ángulo de grabación. Gire el visor hacia arriba para grabar desde una posición baja. **[b]**

(Vea la página siguiente para más información.)

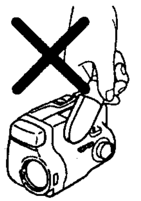
Hints for Better Shooting

- Place your right elbow against your side.
- Place your left hand under the camcorder to support it.
- Place your eye firmly against the viewfinder eyecup.
- Use the viewfinder frame as a guide to determine the horizontal plane.

Cautions on the Viewfinder

- **Do not pick up the camcorder by the viewfinder. [c]**
- **Do not place the camcorder so as to point the viewfinder toward the sun. The inside of the viewfinder heats up and may be damaged. [d]**

[c]



Place the camcorder on a flat surface or use a tripod

Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder (p. 42). Make sure the tripod screw is shorter than 6.5 mm (9/32 in).

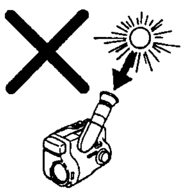
Sugerencias para filmar mejor

- Apoye el codo derecho en su costado.
- Ponga su mano izquierda debajo de la videocámara para apoyarla.
- Apoye firmemente su ojo en el ocular del visor.
- Emplee el cuadro del visor como guía para determinar el plano horizontal.

Precauciones con el visor

- **No sujete la videocámara por el visor. [c]**
- **No coloque la videocámara de forma que su visor quede orientado hacia el sol. El interior del visor se calentará y podría estropearse. [d]**

[d]



Colocación de la videocámara sobre una superficie plana o un trípode

Trate de poner la videocámara sobre una mesa u otra superficie plana de altura apropiada. Si dispone de un trípode para cámara fotográfica, también podrá emplearlo con la videocámara (página 42). Asegúrese de que la longitud del tornillo del trípode sea inferior a 6,5 mm.

Camera Recording

Make sure that the power source is installed and a cassette is inserted. When you start recording, the date is automatically recorded for 10 seconds (AUTO DATE feature). This feature works only once a day.

Before you record one-time events, you may want to make a trial recording to make sure that the camcorder is working perfectly.

(1) Slide the LENS COVER switch to OPEN.

(2) Turn on the power: **[a]** When using a monochrome viewfinder, pull out the viewfinder until it clicks. While pressing the green button of the POWER switch, turn it to CAMERA.

[b] When using a colour viewfinder, while pressing the green button of the POWER switch, turn it to CAMERA. **(3)** Turn STANDBY up. Adjust the viewfinder lens so that the indicators in the viewfinder come into sharp focus (p. 14).

(4) Press START/STOP. As the camcorder starts recording, the red lamp in the viewfinder and the camera recording/battery lamp on the camcorder light up.

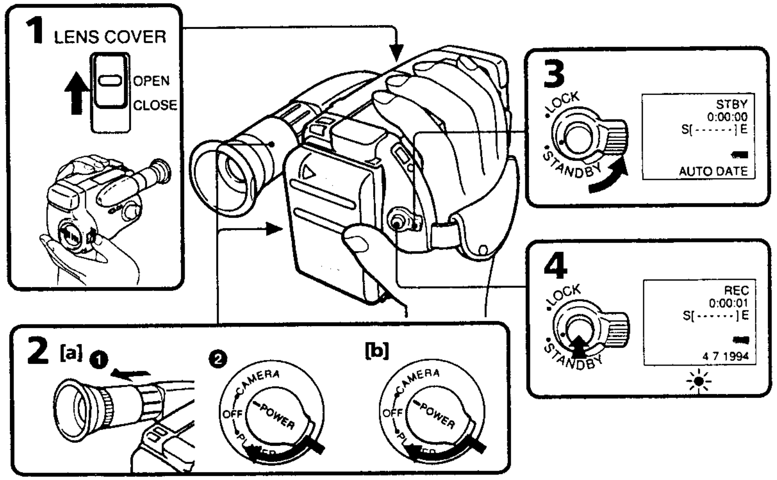
Grabación con videocámara

Asegúrese de que la videocámara tenga la fuente de alimentación instalada y haya un videocasete en su interior. Cuando usted comienza a grabar, la fecha se graba automáticamente durante 10 segundos (característica AUTO DATE). Esta característica sólo funciona una vez al día.

Antes de realizar grabaciones inolvidables, se recomienda realizar una grabación de prueba para asegurarse de que todo funciona perfectamente.

(1) Deslice el conmutador LENS COVER hasta OPEN. **(2)** Conecte la alimentación: **[a]** Cuando utilice un visor en blanco y negro, saque el visor hasta que haga un ruido seco. Manteniendo presionado el botón verde del conmutador POWER, deslice el conmutador hasta CAMERA.

[b] Cuando utilice un visor en color, manteniendo presionado el botón verde del conmutador POWER, deslice el conmutador hasta CAMERA. **(3)** Gire STANDBY hacia arriba. Ajuste la lente del visor de forma que los indicadores del visor puedan verse claramente (página 14). **(4)** Presione START/STOP. Cuando comience la grabación, la lámpara roja en el visor y la de grabación con videocámara/estado de la batería en la videocámara se encenderán.



To Stop Recording Momentarily

Press START/STOP again. The "STBY" indicator appears in the viewfinder (**Standby mode**).

To Finish Recording

Turn STANDBY down and set the POWER switch to OFF. Slide the LENS COVER switch to CLOSE and eject the tape (p. 13).

Notes on Standby mode

If you leave the camcorder in Standby mode for 5 minutes, the camcorder goes off automatically. This prevents wearing down the battery and wearing out the tape. To resume Standby mode, turn STANDBY down once and turn it up again. To start recording, press START/STOP.

Note on the tape counter

The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press COUNTER RESET.

Note on the AUTO DATE feature

- The AUTO DATE feature works once a day. However, the date may automatically appear more than once a day when:
  - you reset the date and time.
  - you eject and insert the tape again.
  - you stop recording within 10 seconds.
- Once the AUTO DATE feature turns off the date display 10 seconds after the start of recording, the date and time are displayed as follows:
  - If the date display setting has been made, the date is displayed.
  - If the time display setting has been made, the time is displayed.
  - If neither display setting has been made, nothing is displayed.

If you wear glasses

When using a monochrome viewfinder, you can bend back the eyecup to get a better view of the viewfinder.
When using a colour viewfinder, you cannot bend back the eyecup.

Para parar momentáneamente la grabación

Vuelva a presionar START/STOP. El indicador "STBY" aparecerá en el visor (**modo de espera**).

Para finalizar la grabación

Gire STANDBY hacia abajo y deslice el conmutador POWER hasta OFF. Deslice el conmutador LENS COVER hasta CLOSE y expulse la cinta (página 13).

Notas sobre el modo de espera

Si deja la videocámara en el modo de espera durante 5 minutos, la videocámara se apagará automáticamente. Esto evitará que se agote la batería y se desgaste la cinta. Para restablecer el modo de espera, gire STANDBY hacia abajo una vez y luego vuelva a girarlo hacia arriba. Para iniciar la grabación, presione START/STOP.

Nota sobre el contador de cinta

El contador de cinta indica el tiempo de grabación o el de reproducción. Emplee este contador a modo de guía. Entre el tiempo indicado y el tiempo real puede haber una diferencia de varios segundos. Para poner el contador a cero, presione COUNTER RESET.

Nota sobre la característica AUTO DATE

- La característica AUTO DATE funciona una vez al día. Sin embargo, la fecha aparecerá automáticamente más de una vez al día cuando:
  - Reponga la fecha y la hora.
  - Expulse e inserte de nuevo la cinta.
  - Pare la grabación antes de transcurrir 10 segundos.
- Una vez que la característica AUTO DATE apague la visualización de la fecha 10 segundos después de iniciar la grabación, la fecha y la hora se visualizarán de la forma siguiente:
  - Si ha ajustado la visualización de la fecha, se visualizará la fecha.
  - Si ha ajustado la visualización de la hora, se visualizará la hora.
  - Si no ha ajustado ninguna de las dos, no se visualizará nada.

Si se emplean gafas

Cuando utilice un visor en blanco y negro, el ocular podrá doblarse hacia atrás para obtener una mejor vista del visor.
Cuando utilice un visor en color, no podrá doblar el ocular hacia atrás.

When moving from indoors to outdoors (or vice versa)

Turn STANDBY up and point the camcorder at a white object for about 15 seconds so that the white balance is properly adjusted.

Note on recording

When you record from the beginning of a tape, run the tape for about 15 seconds before starting the actual recording. This will ensure that you won't miss any start-up scenes when you play back the tape.
You can record tapes in SP (standard play) mode only.

Cambio de interiores a exteriores (o viceversa)

Gire STANDBY hacia arriba y dirija la videocámara hacia un objeto blanco durante unos 15 segundos para que el balance de blancos se ajuste correctamente.

Nota sobre la grabación

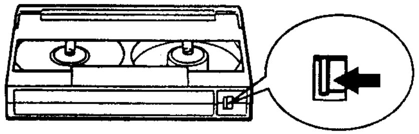
Para grabar desde el comienzo de la cinta, haga que ésta avance unos 15 segundos antes de empezar a grabar. Esto evitará que se pierdan las escenas iniciales al reproducir la cinta.
Las cintas sólo pueden grabarse en el modo SP (reproducción estándar).

Preventing Accidental Erasure

To prevent accidental erasure, slide the tab on the cassette to expose the red mark. If you try to record with the red mark exposed, the 📼 and ⏏ indicators flash in the viewfinder, and you cannot record.
To re-record on this tape, slide the tab back out covering the red mark.

Prevención contra borrado accidental

Para evitar el borrado accidental, deslice la lengüeta del videocasete hasta dejar expuesta la marca roja. Si trata de grabar estando expuesta la marca roja, los indicadores 📼 y ⏏ parpadearán en el visor y no podrá grabar.
Para grabar en esta cinta, deslice la lengüeta para tapar la marca roja.



Using the Zoom Feature

Zooming is a recording technique that lets you change the size of the subject in the scene. You can also use the zoom to decide on a shooting angle before you start recording.

For more professional-looking recordings, use the zoom function sparingly.

"T" side: for telephoto (subject appears closer)

"W" side: for wide-angle (subject appears farther away)

Zooming Speed (Dual speed zooming)

Press the power zoom button firmly for a high-speed zoom, press it softly for a relatively slow zoom.

When you shoot a subject using a telephoto zoom

If you cannot get a sharp focus while in extreme telephoto zoom, press the "W" side of the power zoom button until the focus is sharp. You can shoot a subject that is at least 80 cm (about 31 1/2 inches) away from the lens surface in the telephoto position, or 1 cm (about 1/2 inches) in the wide-angle position.

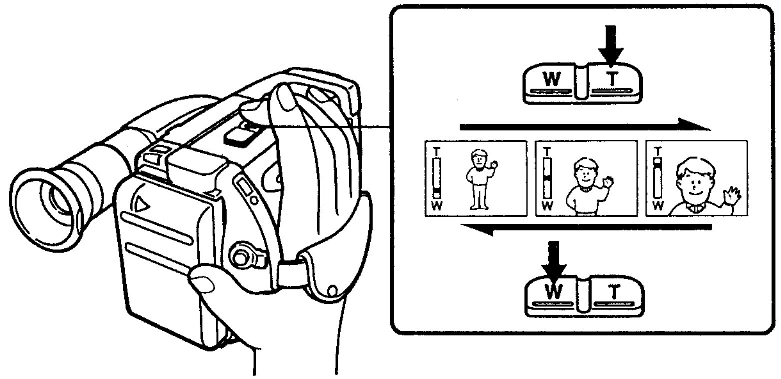
Empleo del zoom

"Zooming" es una técnica de grabación que le permite cambiar el tamaño del motivo en la escena. El zoom puede emplearse también para decidir el ángulo de filmación antes de empezar a grabar.

Para que sus grabaciones sean más profesionales, emplee poco el zoom.

Lado "T": Para telefoto (el motivo aparece más próximo)

Lado "W": Para granangular (el motivo aparece más alejado)



Velocidad del zoom (zoom de dos velocidades)

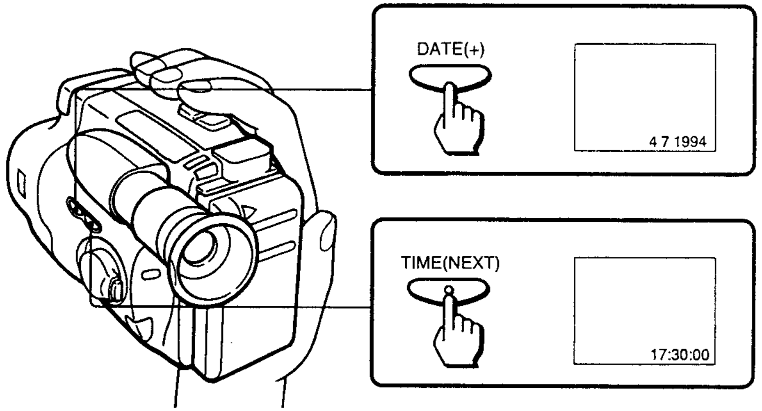
Presione firmemente el botón del zoom para emplear una velocidad alta y suavemente para emplear una velocidad relativamente lenta.

Cuando filme un motivo empleando el zoom de telefoto

Si no se puede enfocar con nitidez empleando el ajuste mínimo de telefoto, presione el lado "W" del botón del zoom motorizado hasta enfocar bien el motivo. Con telefoto pueden filmarse motivos situados a un mínimo de 80 cm de la superficie del objetivo, con granangular pueden filmarse motivos situados a 1 cm.

Recording the Date or Time

While you are recording, press DATE (+) or TIME (NEXT). The date or time displayed in the viewfinder is recorded with the picture. You cannot record the date and time at the same time. Except for the date or time indicator, no indicator in the viewfinder is recorded.



To Stop Recording with the Date and Time

Press DATE (+) or TIME (NEXT) again. The date or time indicator disappears. The recording continues.

Grabación de la fecha o la hora

Mientras graba, presione DATE (+) o TIME (NEXT). La fecha o la hora visualizadas en el visor se grabarán junto con la imagen. La fecha y la hora no pueden grabarse al mismo tiempo. A excepción de la indicación de la hora o de la fecha, no se grabará ninguna otra indicación del visor.

Para parar la grabación con fecha u hora

Vuelva a presionar DATE (+) o TIME (NEXT). La indicación de la fecha o de la hora desaparecerá. La grabación continuará.

Basic Operations Operaciones básicas

Connections for Playback

You can use this camcorder as a VCR by connecting it directly to your TV for playback. There are several ways to connect the camcorder to your TV.

Connecting to a TV or VCR with Audio/Video Input Jacks

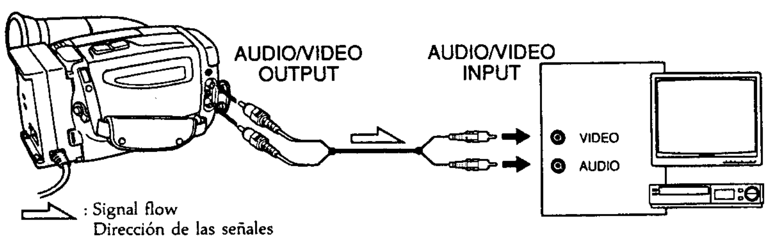
Connect the camcorder to the TV using the supplied A/V connecting cable. Set the TV/VCR selector on the TV to VCR.

Conexiones para la reproducción

Esta videocámara podrá utilizarse como una videograbadora conectándola directamente a su televisor para hacer la reproducción. Hay varias formas de conectar la videocámara a un televisor.

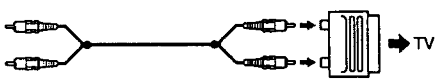
Conexión a un televisor o videograbadora con tomas de entrada de audio/vídeo

Conecte la videocámara al televisor empleando el cable de conexión A/V suministrado. Ponga el selector TV/VCR del TV en VCR.



If your TV has a 21-pin connector (EUROCONNECTOR)
Use the supplied 21-pin adaptor.

Si su televisor tiene un conector de 21 contactos (EUROCONNECTOR)
Emplee el adaptador de 21 contactos suministrado.

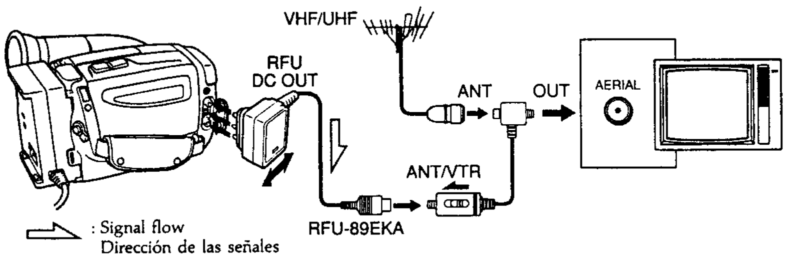


Connecting to a TV without Audio/Video Input Jacks

Connect the camcorder to the TV using an appropriate RFU adaptor such as the RFU-89EKA (not supplied). For details on connection, refer to the instruction manual of the RFU adaptor.
The following illustrates the connection of the RFU-89EKA as an example.

Conexión a un televisor sin tomas de entrada de audio/vídeo

Conecte la videocámara al televisor empleando un adaptador de RFU apropiado tal como el RFU-89EKA (no suministrado). Para detalles sobre la conexión, consulte el manual de instrucciones del adaptador de RFU.
La siguiente illustración muestra la conexión del RFU-89EKA como ejemplo.

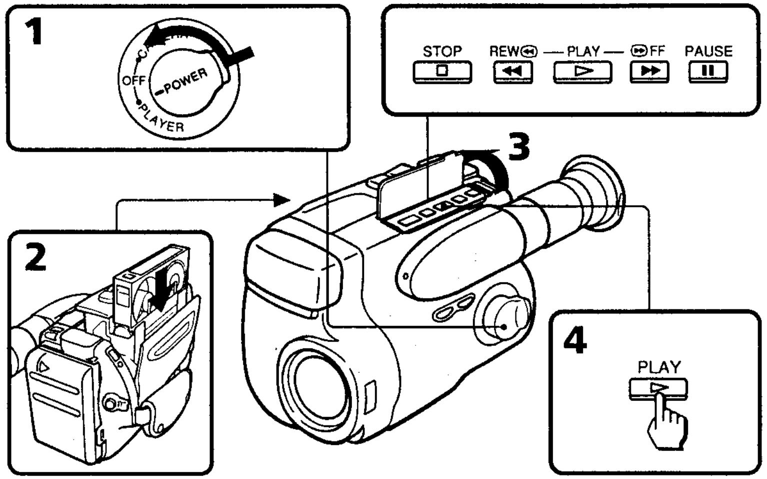


Playing Back a Tape

Reproducción de una cinta

You can monitor the playback picture in the viewfinder. You can also monitor the picture on a TV screen, after connecting the camcorder to a TV or VCR (p. 22, 23).
(1) While pressing the green button of the POWER switch, turn it to PLAYER. **(2)** Insert the recorded tape with the window facing out. **(3)** Open the lid of the control panel. **(4)** Press ▷. Playback starts.

La imagen de reproducción puede comprobarse en el visor. La imagen puede comprobarse también en la pantalla de un televisor después de conectar la videocámara a ese televisor o a la videograbadora conectada al televisor (páginas 22, 23).
(1) Mientras presiona el pequeño botón verde del conmutador POWER, deslice el conmutador hasta PLAYER. **(2)** Inserte la cinta grabada con el lado de la ventanilla hacia afuera. **(3)** Abra la tapa del panel de control. **(4)** Pesione ▷. La reproducción comenzará.



To stop playback, press □.
To rewind the tape, press ◀◀.
To fastforward the tape, press ▶▶.

Para parar la reproducción, presione □.
Para rebobinar la cinta, presione ◀◀.
Para que la cinta avance rápidamente, presione ▶▶.

Various Playback Modes

To view a still picture

Press ❚❚ during playback. To resume playback, press ❚❚ or ▷.

To locate a scene (Picture search)

Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

To monitor the high-speed picture during fastforward or rewind (Skip scan)

Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume normal playback, press ▷.

Note on playback

- Streaks appear and the sound is muted in the various playback modes.
- When still picture mode lasts for 5 minutes, the camcorder automatically enters stop mode.

Diversos modos de reproducción

Para ver una imagen fija

Presione ❚❚ durante la reproducción. Para reanudar la reproducción, presione ❚❚ o ▷.

Para localizar una escena (búsqueda de imágenes)

Mantenga presionado ◀◀ o ▶▶ durante la reproducción. Para reanudar la reproducción normal, deje de presionar el botón.

Para comprobar la imagen a alta velocidad durante el avance rápido o el rebobinado (skip scan)

Mantenga presionado ◀◀ mientras se rebobina la cinta o ▶▶ mientras avanza la cinta. Para reanudar la reproducción normal, presione ▷.

Nota sobre la reproducción

- En los "diversos modos de reproducción" aparecen rayas en la imagen y se silencia el sonido.
- Cuando el modo de imagen fija dure más de 5 minutos, la videocámara entrará automáticamente en el modo de parada.

Using Alternate Power Sources

You can choose any of the following power sources for your camcorder: battery pack (p. 6, 7), house current, and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Indoors	House current	AC power adaptor AC-V25/V25A (supplied), AC-S10
Outdoors	Battery pack	Battery pack NP-55 (supplied), NP-77H/77HD, NP-66/66H, NP-55H
In the car	12 V or 24 V car battery	DCP-77 DC pack

Using House Current

To use the supplied AC-V25/V25A AC power adaptor:

(1) Lift up the viewfinder. **(2)** Connect the AC power cord to a wall outlet. Connect the bottom of the AC power adaptor to the battery mounting surface of the camcorder. **(3)** Set the selector to VTR (DC OUT).

Empleo de fuentes de alimentación alternativas

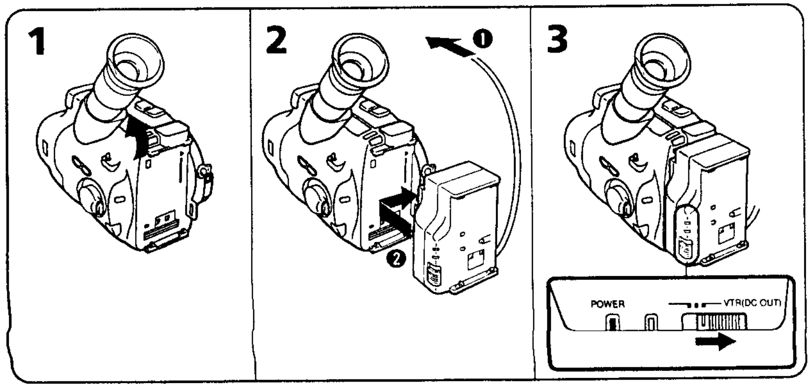
Con la videocámara podrá utilizarse cualquiera de las fuentes de alimentación siguientes: batería (páginas 6, 7), corriente del hogar y batería de automóvil de 12/24 V. Elija la fuente de alimentación apropiada según el lugar donde vaya a utilizar la videocámara.

Lugar	Alimentación	Accesorios para utilizar
Interiores	Corriente del hogar	Adaptador de CA AC-V25/V25A (suministrado), AC-S10
Exteriores	Batería	Batería NP-55 (suministrada), NP-77H/77HD, NP-66/66H, NP-55H
En un automóvil	Batería de automóvil 12 V o 24 V	Grupo CC DCP-77

Empleo de la corriente del hogar

Para utilizar el adaptador de CA AC-V25/V25A suministrado:

(1) Levante el visor. **(2)** Conecte el cable de alimentación de CA a una toma de la red. Conecte la base del adaptador de CA a la superficie de montaje de la batería de la videocámara. **(3)** Ponga el selector en VTR (DC OUT).



Note on the POWER lamp

- The POWER lamp will remain lit for a while even if the unit is unplugged after use. This is normal.
- If the POWER lamp does not light, set the selector to the center position and disconnect the power cord. After about one minute, reconnect the power cord and set the selector to VTR (DC OUT) again.

To remove the adaptor

The adaptor is removed in the same way as the battery pack. (p. 9)

Using a Car Battery

Use the DCP-77 DC pack (not supplied). Connect the cord of the DC pack to the cigarette lighter socket of the car (12 V or 24 V). Connect the DC pack to the battery mounting surface of the camcorder.

To remove the DC pack

The DC pack is removed in the same way as the battery pack. (p. 9)

Options for Charging the Battery Pack

AC-S10 AC power adaptor:
You can charge a battery pack whether it is used up or not with this adaptor because it has a discharging function.

Nota sobre la lámpara POWER

- La lámpara POWER permanecerá encendida por un rato a pesar de que la unidad esté desenchufada tras emplearla. Esto es normal.
- Si la lámpara POWER no se enciende, ponga el selector en la posición central y desconecte el cable de alimentación. Después de pasar un minuto, vuelva a conectar el cable de alimentación y vuelva a poner el selector en VTR (DC OUT).

Para extraer el adaptador

El adaptador se extrae de igual forma que la batería. (Página 9)

Empleo de una batería de automóvil

Emplee el grupo CC DCP-77 (no suministrado). Conecte el cable del grupo CC al receptáculo para encendedor de cigarrillos de un automóvil (batería de 12 V o 24 V). Conecte el grupo CC a la superficie de montaje de la batería de la videocámara.

Para extraer el grupo CC

El grupo CC se extrae de igual forma que la batería. (Página 9)

Opciones para cargar la batería

Adaptador de CA AC-S10:
Con este adaptador podrá cargarse una batería, tanto si está agotada como si no, porque dispone de una función de descarga.

Editing onto Another Tape

You can create your own video programme by editing with any other 8 8 mm, Hi8 Hi8, VHS VHS, SVHS S-VHS, VHSC VHSC, SVHSC S-VHSC or B Betamax VCR that has audio/video inputs.

Before Editing

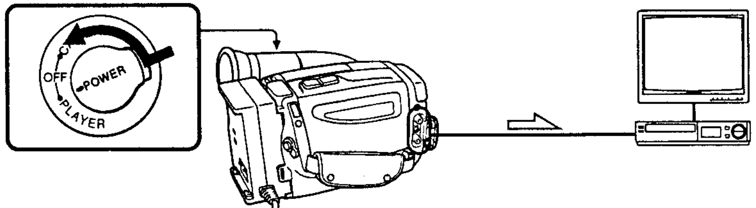
Connect the camcorder to the VCR using the supplied A/V connecting cable. (p. 22)
Set the input selector on the VCR to LINE, if available. Set the POWER switch to PLAYER.

Edición en otra cinta

Usted podrá crear sus propios programas de vídeo editando con cualquier otra videograbadora de 8 8 mm, Hi8 Hi8, VHS VHS, SVHS S-VHS, VHSC VHSC, SVHSC S-VHSC o B Betamax que disponga de entradas de audio/vídeo.

Antes de editar

Conecte la videocámara a la videograbadora empleando el cable de conexión A/V suministrado. (página 22)
Ponga el selector de entrada de la videograbadora en LINE, si tuviese esa posición. Ponga el conmutador POWER en PLAYER.



: Signal flow
Dirección de las señales

Starting Editing

(1) Insert a blank tape (or a tape you want to record over) into the VCR. And insert your recorded tape into the camcorder. **(2)** Play back the tape on the camcorder until you locate the point where you want to start editing, then set the camcorder in the playback pause mode.
(3) On the VCR, locate the recording start point and set the VCR in the recording pause mode.
(4) Press II on the camcorder and VCR simultaneously to start editing.

To Edit More Scenes
Repeat steps 2 to 4.

To Stop Editing Momentarily
Press II on the VCR.

To Stop Editing
Press □ on both the camcorder and the VCR.

Inicio de edición

(1) Inserte una cinta sin grabar (o una cinta sobre la que desea grabar) en la videograbadora. Inserte la cinta grabada en la videocámara.
(2) Reproduzca la cinta en la videocámara hasta localizar el punto donde desea iniciar la edición, luego ponga la videocámara en el modo de pausa de reproducción. **(3)** En la videograbadora, localice el punto de inicio de la grabación y póngala en el modo de pausa de grabación.
(4) Presione simultáneamente II de la videocámara y de la videograbadora para iniciar la edición.

Para editar más escenas
Repita los pasos 2 a 4.

Para parar momentáneamente la edición
Presione II de la videograbadora.

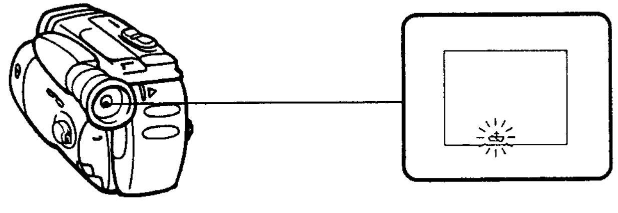
Para parar la edición
Presione □ de la videocámara y de la videograbadora.

Changing the Lithium Battery

Your camcorder is supplied with a lithium battery installed. The lithium battery lasts for about 1 year under normal operation. When the battery becomes weak or dead, the indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA. In this case, **replace the battery with a Sony CR2025 lithium battery. Use of any other battery may present a risk of fire or explosion.**

Cambio de la pila de litio

Con su videocámara se suministra una pila de litio ya instalada. La pila de litio dura aproximadamente un año bajo condiciones de funcionamiento normal. Cuando la pila se debilite o agote, el indicador parpadeará en el visor durante unos 5 segundos, al poner el conmutador POWER en CAMERA.
En este caso, **reemplácela por una pila de litio Sony CR2025. El empleo de otras pilas podría suponer un riesgo de incendio o explosión.**

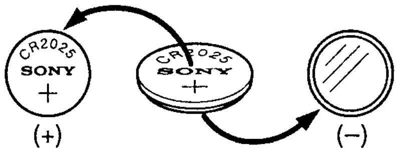


Note on Lithium Battery

The lithium battery has a positive (+) side and a negative (–) side as illustrated below. **Be sure to install the lithium battery with the positive side facing out.**

Nota sobre la pila de litio

La pila de litio tiene un lado positivo (+) y otro negativo (–) como se ilustra a continuación. **Asegúrese de instalar la pila de litio con el lado positivo hacia afuera.**



WARNING

The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

Caution

Keep the lithium battery out of the reach of children.
Should the battery be swallowed, consult a doctor immediately.

AVISO

La pila puede explotar si la trata mal. No la cargue, desarme ni tire al fuego.

Precaución

Mantenga la pila de litio fuera del alcance de los niños.
Si alguien traga la pila, consulte inmediatamente a un médico.

Changing the Lithium Battery

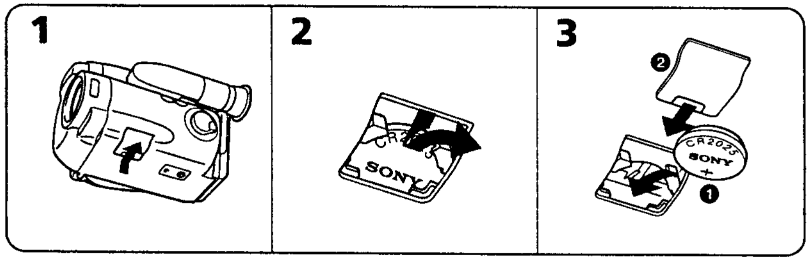
When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date and time.

(1) Detach the lid of the lithium battery compartment on the bottom of the camcorder. **(2)** Push the battery down once and pull it out from the holder. **(3)** Install the lithium battery with the positive (+) side facing out. Replace the lid.

Cambio de la pila de litio

Cuando reemplace la pila de litio, mantenga la batería u otras fuentes de alimentación conectadas. De lo contrario, tendrá que volver a ajustar la fecha y la hora.

(1) Desprenda la tapa del compartimiento de la pila de litio ubicada en la base de la videocámara. **(2)** Empuje la pila hacia abajo una vez y sáquela del portapila. **(3)** Instale la pila de litio con el lado positivo (+) hacia afuera. Coloque la tapa.



Resetting the Date and Time

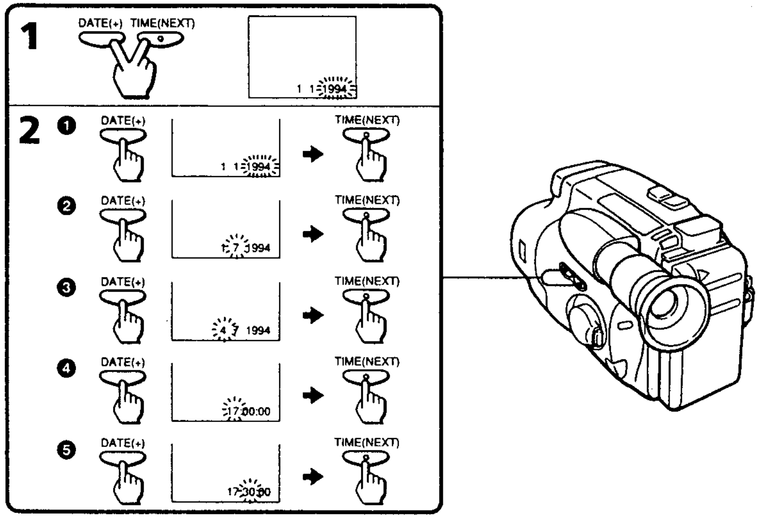
The camcorder's clock is set to London time for United Kingdom, and for the other European countries, to Paris time, but you can reset the date and time. Set the POWER switch to CAMERA and turn STANDBY up. Adjust the digits in the viewfinder.

(1) Press DATE (+) and TIME (NEXT) simultaneously until the date appears in the viewfinder. **(2)** Adjust the digits of the year, month, day, hour and minutes by pressing DATE (+) and TIME (NEXT). To set the year to 1994, there is no need to press DATE (+) in 2-❶. Note that when you keep DATE (+) pressed, the digits advance faster.

Ajuste de la fecha y la hora

El reloj de su videocámara ha sido ajustado en fábrica con la hora de Londres para el Reino Unido, y para todos los demás países europeos, con la hora de París, pero usted puede volver a ajustar la fecha y la hora. Ponga el conmutador POWER en CAMERA y gire STANDBY hacia arriba. Ajuste los dígitos en el visor.

(1) Presione simultáneamente DATE (+) y TIME (NEXT) hasta que aparezca la fecha en el visor. **(2)** Ajuste los dígitos del año, mes, día, horas y minutos presionando DATE (+) y TIME (NEXT). Para ajustar el año 1994, no necesita presionar DATE (+) del paso 2-❶. Tenga en cuenta que al mantener presionado DATE (+), los dígitos avanzan rápidamente.



To Correct the Date and Time Settings

Press TIME (NEXT) repeatedly until the minute digits stop flashing. Then repeat steps 1 and 2.

To Check the Preset Date and Time

Press DATE (+) or TIME (NEXT). When you press the same button again, the indicator goes off.

Para corregir los ajustes de la fecha y la hora

Presione repetidamente TIME (NEXT) hasta que los dígitos de los minutos dejen de parpadear. Luego repita los pasos 1 y 2.

Para comprobar la fecha y la hora preajustadas

Presione DATE (+) o TIME (NEXT). El indicador se apagará al volver a presionar el mismo botón.

Resetting the Date and Time

Note on the setting of the year
When you set the year, each time you press DATE (+) the digits change as follows.

1994 → 1995 → ----→ 2020

Ajuste de la fecha y la hora

Nota sobre el ajuste del año
Cuando ajuste el año, cada vez que presione DATE (+), los dígitos cambiarán de la forma siguiente:

1994 → 1995 → ----→ 2020

Playback Modes

The playback mode (SP or LP) is selected automatically according to the format in which the tape has been recorded. The quality of the recorded picture in LP mode, however, will not be as good as that in SP mode.

LP (long play) mode
When you playback a tape recorded in LP mode, the LP indicator lights up in the viewfinder.
This camcorder cannot record a tape in LP mode.

Foreign 8 mm video
You cannot playback software recorded on a different TV colour system. Because the TV colour systems differ from country to country, you may not be able to play back foreign pre-recorded software. Refer to page 40 to check the TV colour system of foreign countries.

Modos de reproducción

El modo de reproducción (SP o LP) se selecciona automáticamente según el formato en el que ha sido grabada la cinta. La calidad de la imagen grabada en el modo LP, sin embargo, no será tan buena como la del modo SP.

Modo LP (larga duración)
Cuando reproduzca una cinta grabada en el modo LP, el indicador LP se encenderá en el visor. Esta videocámara no puede grabar una cinta en el modo LP.

Vídeo de 8 mm del extranjero
Las cintas grabadas con otros sistemas de TV en color no podrán ser reproducidas con su videocámara. Como los sistemas de televisión cambian según los países, quizá no pueda reproducir cintas grabadas en el extranjero. Consulte la página 40 para comprobar cuáles son los sistemas de TV en color de otros países del extranjero.

Maintenance Information and Precautions

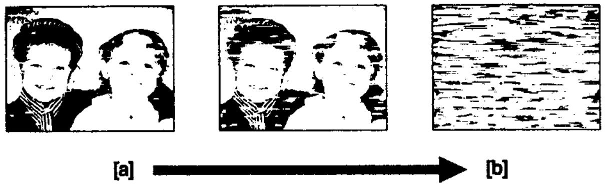
Video Head Cleaning

To ensure clear pictures, clean the video heads periodically. When playback pictures are "noisy" or hardly visible, the video heads may be contaminated.

Información de mantenimiento y precauciones

Limpieza de las cabezas de vídeo

Para asegurar imágenes claras, limpie periódicamente las cabezas de vídeo. Cuando las imágenes reproducidas tengan ruido o apenas se vean, las cabezas de vídeo podrían estar sucias.



[a] Slight contamination
[b] Critical contamination
If this happens, clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied). After checking the picture, if it is still "noisy", repeat the cleaning. (Do not repeat cleaning more than 5 times.)

Caution

Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note
If the V8-25CLH cleaning cassette is not available in your area, consult your Sony service facility.

[a] Contaminación ligera
[b] Contaminación crítica
En tal caso, limpie las cabezas de vídeo con el videocasete de limpieza Sony V8-25CLH (no suministrado). Después de comprobar la imagen, si sigue teniendo ruido, repita la limpieza. (No repita la limpieza más de 5 veces.)

Precaución

No emplee videocasetes de limpieza tipo húmedo de venta en el comercio del ramo porque las cabezas podrían estropearse.

Nota
Si no puede adquirir en su zona el videocasete de limpieza V8-25CLH, consulte a su centro de servicio Sony.

Removing Dust from inside the Viewfinder

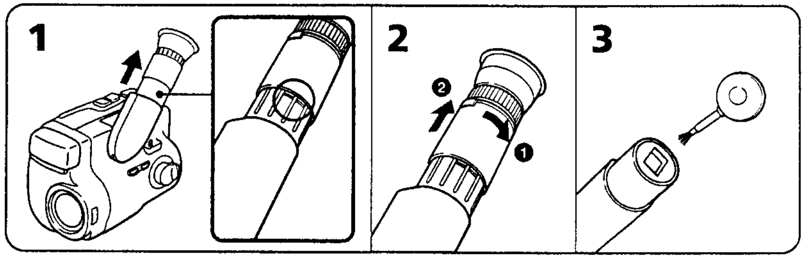
When Using a Monochrome Viewfinder

(1) Pull out the viewfinder barrel until the illustrated mark appears. **(2)** Turn the viewfinder counterclockwise until it stops, and pull it out. **(3)** Clean the surface with a commercially available blower.

Limpieza del polvo del interior del visor

Cuando utilice un visor en blanco y negro

(1) Saque el cuerpo del visor hasta que aparezca la marca mostrada en la ilustración. **(2)** Gire el visor hacia la izquierda hasta que se pare y sáquelo. **(3)** Limpie la superficie con un soplador de aire de venta en el comercio del ramo.

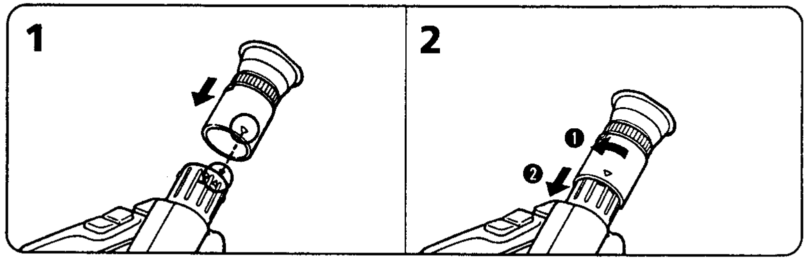


To reattach the viewfinder barrel

(1) Align the mark on the viewfinder barrel with the mark on the viewfinder and push in the viewfinder barrel until it clicks. **(2)** Turn it clockwise until it stops and push it in.

Para volver a colocar el cuerpo del visor

(1) Alinee la marca del cuerpo del visor con la marca del visor y empuje el cuerpo del visor hasta que haga un ruido seco. **(2)** Gírelo hacia la derecha hasta que se pare y métalo.

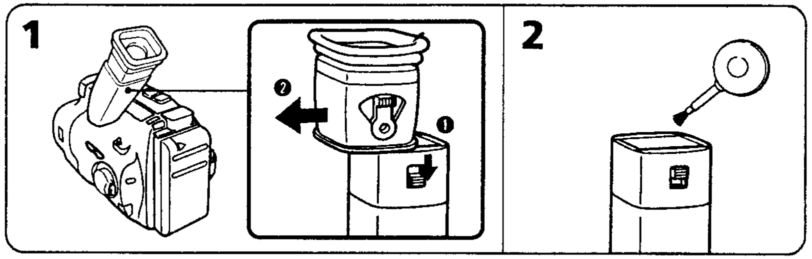


When Using a Colour Viewfinder

(1) While pressing down the hook, slide the viewfinder barrel in the direction of the arrow and remove it from the viewfinder. **(2)** Clean the surface with a commercially available blower.

Cuando utilice un visor en color

(1) Mientras presiona el cierre hacia abajo, deslice el cuerpo del visor en la dirección de la flecha y retírelo del visor. **(2)** Limpie la superficie con un soplador de aire de venta en el comercio del ramo.



To reattach the viewfinder barrel

Slide the viewfinder barrel in the opposite direction of the arrow in the above illustration.

Para volver a colocar el cuerpo del visor

Deslice el cuerpo del visor en la dirección opuesta de la flecha de la ilustración de arriba.

Moisture Condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. However, take the following precautions.

Condensación de humedad

Si traslada directamente la videocámara de un lugar frío a otro cálido, es posible que se condense humedad en su interior, en la superficie de la cinta o en la lente del objetivo. En estas condiciones, la cinta puede adherirse al tambor de cabezas y estropearse, o la videocámara puede no funcionar adecuadamente. Para evitar la posibilidad de que se produzcan fallos en estas circunstancias, la videocámara dispone de sensores de humedad. Sin embargo, tome las precauciones siguientes.

(See next page for further information.)

(Vea la página siguiente para más información.)

Maintenance Information and Precautions

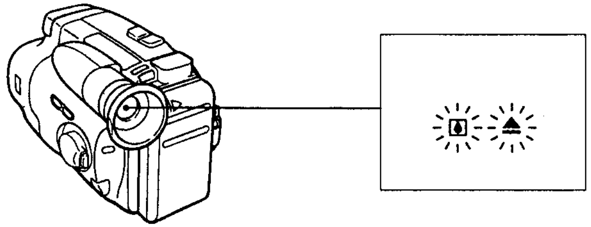
Información de mantenimiento y precauciones

Inside the Camcorder

When the 💧 and ⏏ indicators flash in the viewfinder, moisture has condensed inside the camcorder. If this happens, no other functions except for cassette ejection will work.
Eject the cassette, turn off the camcorder and leave it with the cassette holder open for at least one hour in a dry place.
The camcorder can be used again if the 💧 indicator does not appear when the power is turned on again.

En el interior de la videocámara

Cuando parpadeen los indicadores 💧 y ⏏ en el visor, se habrá condensado humedad en el interior de la videocámara. En este caso, no funcionará ninguna función de la videocámara excepto la expulsión del videocasete.
Extraiga la cinta, desconecte la alimentación de la videocámara y deje ésta con el portacasete abierto durante una hora como mínimo en un lugar seco.
La videocámara podrá volver a emplearse cuando el indicador 💧 no aparezca al conectar de nuevo la alimentación.



On the Surface of the Tape

If there is moisture on the surface of the tape, when the cassette is inserted and a tape transport button is pressed, the ⏏ indicator in the viewfinder flashes. In this case, no other functions except for tape ejection will work.
Eject the cassette, turn off the camcorder and leave it with the cassette holder open for at least one hour in a dry place.
The camcorder can be used again if the ⏏ indicator does not appear when you insert the cassette and press one of the tape transport buttons.

En la superficie de la cinta

Si hay humedad en la superficie de la cinta, cuando se inserte el videocasete y se presione un botón de transporte de la cinta, el indicador ⏏ del visor parpadeará. En este caso no funcionará ninguna función, salvo la de expulsión de la cinta. **Expulse la cinta, desconecte la alimentación de la videocámara y deje ésta con el portacasete abierto durante una hora como mínimo en un lugar seco.**
La videocámara podrá volver a utilizarse si el indicador ⏏ no aparece al insertar el videocasete y presionar uno de los botones de transporte de la cinta.

On the Lens

If moisture condenses on the lens, no indicator appears, but the picture becomes dim. Turn off the power and do not use the camcorder for about one hour.

How to Prevent Moisture Condensation

When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.

(1) Be sure to tightly seal the plastic bag containing the camcorder.
(2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about one hour).

En la lente del objetivo

Si se condensa humedad en la lente del objetivo no aparecerán indicadores, pero la imagen perderá intensidad. Desconecte la alimentación y deje reposar la videocámara durante una hora aproximadamente.

Cómo evitar la condensación de humedad

Cuando pase la videocámara de un lugar frío a otro cálido, meta la videocámara en una bolsa de plástico y deje que se adapte a las condiciones de la sala durante cierto periodo de tiempo.

(1) No se olvide de cerrar firmemente la bolsa de plástico en cuyo interior está la videocámara.
(2) Saque la videocámara de la bolsa cuando la temperatura del aire del interior de la bolsa haya alcanzado la temperatura ambiental (después de pasar una hora aproximadamente).

Precautions

Camcorder Operation

- Operate the camcorder on 6.0 V (battery pack) or 7.5 V (AC power adaptor).
- For DC or AC operation, use the accessories recommended in this manual.
- Should any solid object or liquid fall into the casing, unplug the camcorder and have it checked by qualified personnel before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the LENS COVER switch set to CLOSE when not using the camera.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.
- Do not drop the camcorder.

Precauciones

Funcionamiento de la videocámara

- Emplee la videocámara con 6,0 V (batería) o 7,5 V (adaptador de CA).
- Para que funcione con CC o CA, emplee los accesorios recomendados en este manual.
- Si dentro de la videocámara cae algún objeto sólido o líquido, desconecte la fuente de alimentación y haga que sea revisada por personal cualificado antes de seguir manipulándola.
- Evite manejarla con rudeza y los choques mecánicos. Tenga mucho cuidado con el objetivo.
- Mantenga el conmutador LENS COVER en CLOSE cuando no utilice la videocámara.
- No emplee la videocámara envuelta porque podría calentarse.
- Mantenga la videocámara alejada de campos magnéticos intensos o vibraciones mecánicas.
- No deje caer la videocámara.

Maintenance Information and Precautions

Información de mantenimiento y precauciones

On Handling Tapes

Do not insert anything in the small holes on the rear of the cassette. These holes are used to sense the type, thickness of tape, or if the tab is out or in, etc.

Camcorder Care

- **When the camcorder is not to be used for a long time, disconnect the power source and remove the tape.** Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on it, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.

AC Power Adaptor

Charging

- **Repeated charging while some capacity remains causes a lowering of battery capacity. However, the original battery capacity can be recovered if you use the battery completely and charge it fully again.**
- Charge the battery on a flat place without vibration.
- The battery will get hot during charging. But this is normal.

Do not continuously recharge a charged battery pack as that will cause the battery pack efficiency to deteriorate.

Charging temperature

The temperature range for charging is 5°C to 35°C (41°F to 95°F). However, to provide maximum battery efficiency, the recommended temperature range when charging is 10°C to 30°C (50°F to 86°F).

Manipulación de cintas

Nunca inserte nada en los orificios pequeños de la parte posterior del videocasete. Estos orificios se utilizan para averiguar el tipo de cinta, su grosor, si la lengüeta está insertada o no, etc.

Cuidados de la videocámara

- **Cuando no vaya a utilizar la videocámara durante mucho tiempo, desconecte la fuente de alimentación y extraiga la cinta.** Periódicamente, conecte la alimentación, emplee las secciones de la cámara y del reproductor, y reproduzca una cinta durante unos 3 minutos.
- Para eliminar el polvo, limpie la lente del objetivo con un cepillo suave. Si hubiera huellas dactilares en la lente, límpielas con un paño suave.
- Limpie el cuerpo de la videocámara con un paño suave y seco, o con un paño suave ligeramente humedecido en una solución de detergente suave. No emplee ningún tipo de disolvente porque podría estropearse el acabado.

Adaptador de CA

Carga

- **La carga repetida de la batería sin estar ésta completamente descargada reducirá su capacidad. Sin embargo, la capacidad original de la batería podrá recuperarse al emplearla hasta que se agote y al cargarla de nuevo completamente.**
- Cargue la batería en un lugar plano y sin vibraciones.
- La batería se calentará durante la carga. Esto es normal.

No siga cargando una batería que ya está cargada porque su eficacia se reducirá.

Temperatura de carga

La temperatura adecuada para la carga se encuentra entre 5°C y 35°C. Sin embargo, para que la batería ofrezca la máxima eficacia, la gama recomendada de temperaturas de carga se encuentra entre 10°C y 30°C.

Others

- Unplug the unit from the wall outlet when not in use for a long time. To disconnect the cord (mains lead), pull it out by the plug. Never pull the cord itself.
- Do not operate the unit with a damaged cord or if it has been dropped or damaged.
- Do not bend the AC power cord forcibly, or put a heavy object on it. This will damage the cord and may cause a fire or an electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If it does, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock nor drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- While the unit is in use, it gets hot. But this is normal.
- Do not place the unit in locations where it is;
  - Extremely hot or cold
  - Dusty or dirty
  - Very humid
  - Vibrating

If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

Otras medidas de precaución

- Desenchufe la unidad de la toma de corriente cuando no vaya a emplearla durante mucho tiempo. Para desconectar el cable de alimentación de la red, tire del enchufe. Nunca tire del propio cable.
- No emplee la unidad si tiene un cable estropeado o si se ha caído o estropeado.
- No doble a la fuerza el cable de alimentación de CA, tampoco ponga objetos pesados sobre él. En estos casos, el cable podría estropearse y causar un incendio o una sacudida eléctrica.
- Asegúrese de que nada metálico entre en contacto con las partes metálicas de la placa de conexión. En caso contrario, podría producirse un cortocircuito y la unidad se estropearía.
- Mantenga siempre limpios los contactos metálicos.
- No desmonte la unidad.
- Evite los golpes mecánicos y no deje caer la unidad.
- Mientras emplea la unidad, y particularmente durante la carga, manténgala alejada de receptores de AM y equipos de vídeo porque la recepción de AM y el funcionamiento de los equipos de vídeo no será adecuado.
- La unidad se calienta mientras se emplea. Esto es normal.
- No ponga la unidad en los lugares siguientes:
  - Donde haga mucho frío o calor
  - Donde haya polvo o suciedad
  - Donde haya mucha humedad
  - Donde haya vibraciones

Si se produce alguna dificultad, desenchufe la unidad y póngase en contacto con su concesionario Sony más cercano.

Using Your Camcorder Abroad

Each country has its own electricity and TV colour system. Before using your camcorder abroad, check the following points.

Power Sources

You can use your camcorder in any country with the supplied AC power adaptor within 110 V to 240 V AC, 50/60 Hz.

Difference in Colour Systems

This camcorder is a PAL system based camcorder. If you want to view the playback picture on a TV, it must be a PAL system based TV or a SECAM system based TV with a PAL/SECAM transcoder.
Check the following list.

PAL system countries
Australia, Austria, Belgium, China, Denmark, Finland, former West Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system country
Brazil

PAL-N system countries
Argentina, Paraguay, Uruguay

NTSC system countries
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

SECAM system countries
Bulgaria, France, Guiana, Hungary, Iran, Iraq, Monaco, Poland, former Soviet Union, etc.

Empleo de la videocámara en el extranjero

Cada país tiene su sistema de suministro eléctrico y sistema de televisión en color. Antes de emplear la videocámara en el extranjero, compruebe los puntos siguientes.

Fuentes de alimentación

Usted podrá utilizar su videocámara en cualquier país con el adaptador de CA suministrado dentro del margen de 110 V a 240 V CA, 50/60 Hz.

Diferencia en los sistemas de color

Esta videocámara se basa en el sistema PAL. Si desea ver la imagen reproducida en un televisor, éste deberá ser un televisor basado en el sistema PAL, o un televisor basado en el sistema SECAM que disponga de un transcodificador PAL/SECAM.
Compruebe la lista siguiente:

Países con el sistema PAL
Australia, Austria, Bélgica, China, Dinamarca, Finlandia, antigua R.D.A., Gran Bretaña, Holanda, Hong Kong, Italia, Kuwait, Malasia, Nueva Zelanda, Noruega, Portugal, Singapur, España, Suecia, Suiza, Tailandia, etc.

País con el sistema PAL-M
Brasil

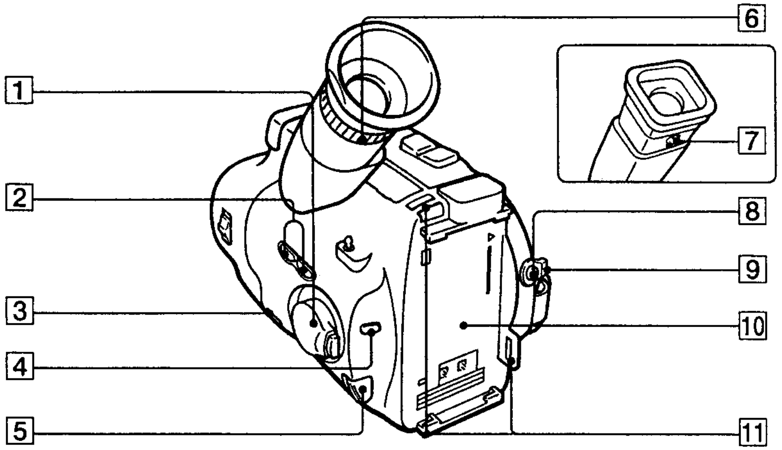
Países con el sistema PAL-N
Argentina, Paraguay, Uruguay

Países con el sistema NTSC
Islas Bahamas, Bolivia, Canadá, Centroamérica, Chile, Colombia, Ecuador, Jamaica, Japón, Corea, México, Perú, Surinam, Taiwan, Filipinas, EE.UU, Venezuela, etc.

Países con el sistema SECAM
Bulgaria, Francia, Guyana, Hungría, Irán, Iraq, Mónaco, Polonia, antigua Unión Soviética, etc.

Identifying the Parts

Identificación de partes

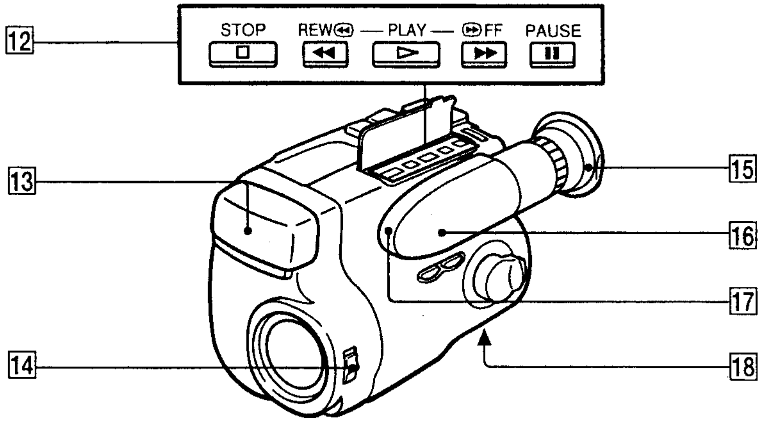


1 **POWER switch** (p. 17, 24)
2 **DATE (+) and TIME (NEXT) buttons** (p. 31)
3 **Lithium battery compartment (bottom of the Camcorder)** (p. 30)
4 **COUNTER RESET button** (p. 18)
5 **BATT (battery eject) knob** (p. 9)
6 **Viewfinder lens adjustment ring** (p. 14)
7 **Viewfinder lens adjustment lever** (p. 14)
8 **START/STOP button** (p. 17)
9 **STANDBY switch** (p. 17)
10 **Battery mounting surface** (p. 9)
11 **Hooks for shoulder strap**

1 **Conmutador de alimentación (POWER)** (Páginas 17, 24)
2 **Botones de la fecha y de la hora (DATE (+) y TIME (NEXT))** (Página 31)
3 **Compartimiento de la pila de litio (en la base de la videocámara)** (Página 30)
4 **Botón de puesta a cero del contador (COUNTER RESET)** (Página 18)
5 **Pomo de expulsión de la batería (BATT)** (Página 9)
6 **Anillo de ajuste de la lente del visor** (Página 14)
7 **Palanquilla de ajuste de la lente del visor** (Página 14)
8 **Botón de inicio/parada (START/STOP)** (Página 17)
9 **Conmutador de puesta en espera (STANDBY)** (Página 17)
10 **Superficie de montaje de la batería** (Página 9)
11 **Ganchos para la correa de bandolera**

Identifying the Parts

Identificación de partes



12 **Tape transport buttons** (p. 24)
- □ STOP
- ◀◀ REW (rewind)
- ▷ PLAY (playback)
- ▶▶ FF (fastforward)
- ❚❚ PAUSE

13 **Built-in microphone**

14 **LENS COVER switch**

15 **Eyecup**

16 **Viewfinder** (p. 14)

17 **Camera recording/battery lamp**

18 **Tripod receptacle** (p. 16)

12 **Botones de transporte de la cinta** (Página 24)
- □ STOP (parada)
- ◀◀ REW (rebobinado)
- ▷ PLAY (reproducción)
- ▶▶ FF (avance rápido)
- ❚❚ PAUSE (pausa)

13 **Micrófono incorporado**

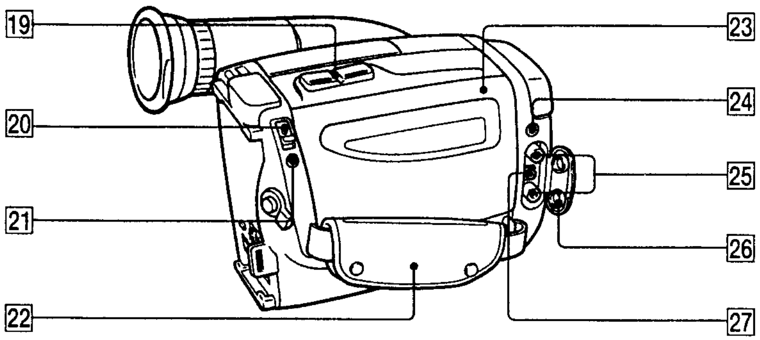
14 **Conmutador de la tapa del objetivo (LENS COVER)**

15 **Ocular**

16 **Visor** (Página 14)

17 **Lámpara de grabación con videocámara/estado de la batería**

18 **Receptáculo para el trípode** (Página 16)



19 **Power zoom button** (p. 20)

20 **EJECT knob** (p. 13)

21 **REMOTE Ⓛ (LANC) control jack**
Ⓛ stands for Local Application Control Bus System. The Ⓛ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the jack indicated as CONTROL L or REMOTE.

22 **Grip strap** (p. 15)

23 **Cassette holder** (p. 13)

24 **MIC jack (PLUG IN POWER)**
Connect an optional external microphone (stereo or monaural). This jack also accepts a "plug-in-power" microphone.

25 **Audio/Video output jacks** (p. 22)

26 **Jack cover**

27 **RFU DC OUT (RFU adaptor DC output) jack** (p. 23)

19 **Botón del zoom motorizado** (Página 20)

20 **Pomo de expulsión (EJECT)** (Página 13)

21 **Toma para control remoto (REMOTE Ⓛ (LANC))**
Ⓛ significa Sistema de Bus de Control de Aplicación Local. La toma de control Ⓛ se emplea para controlar el transporte de la cinta del equipo de vídeo y de los equipos periféricos conectados a él. Esta toma tiene la misma función que la toma señalada como CONTROL L o REMOTE.

22 **Correa de la empuñadura** (Página 15)

23 **Compartimiento del videocasete** (Página 13)

24 **Toma de micrófono (MIC) (encendido automático al conectar) (PLUG IN POWER)**
Conecte a esta toma un micrófono externo opcional (estereofónico o monofónico).
En esta toma puede conectarse también un micrófono de "encendido automático al conectar".

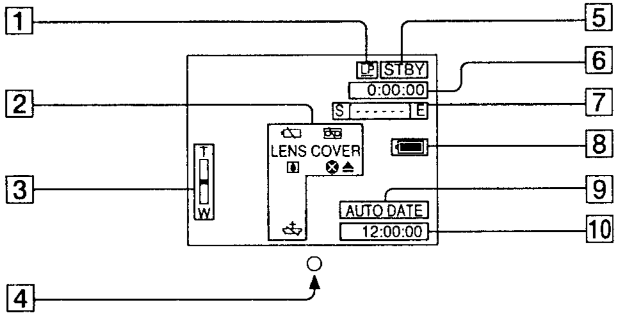
25 **Tomas de salida de audio/vídeo** (Página 22)

26 **Tapa de tomas**

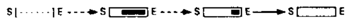
27 **Toma de salida de CC del adaptdor de RFU (RFU DC OUT)** (Página 23)

Operation Indicators

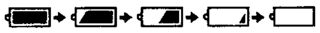
For details on each indicator, refer to the pages indicated in the parentheses.



1. Lights up when playing back a tape recorded in LP mode
2. Warning indicators (p. 53)
3. Power zoom indicator (p. 20)
4. Recording lamp/Battery lamp
5. Tape transport mode (p. 18)
6. Tape counter (p. 18)
7. Remaining tape length indicator



8. Remaining battery indicator (p. 10)

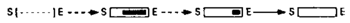


9. AUTO DATE indicator (p. 17)
10. Date or Time (p. 31)

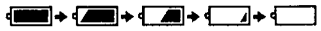
Indicadores de operación

Para obtener detalles de cada indicador, consulte las páginas indicadas entre paréntesis.

1. Se enciende cuando se reproduce una cinta grabada en el modo LP.
2. Indicadores de aviso (Página 53)
3. Indicador del zoom motorizado (Página 20)
4. Lámpara de grabación/estado de la batería
5. Modo de transporte de la cinta (Página 18)
6. Contador de cinta (Página 18)
7. Indicador de cinta restante



8. Indicador del estado de la batería (Página 10)

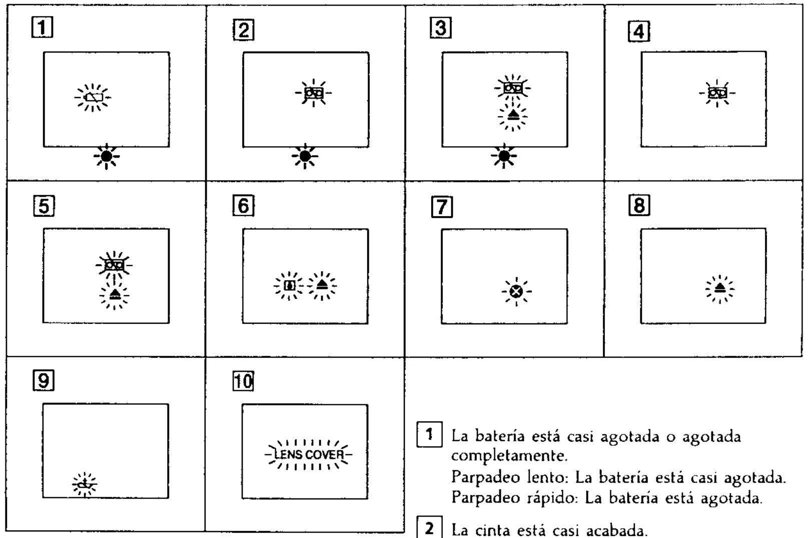


9. Indicador AUTO DATE (Página 17)
10. Fecha u hora (Página 31)

Indicators in the Viewfinder

Warning Indicators

If indicators flash in the viewfinder or a caution lamp on the camcorder flashes, check the following:



1. The battery is weak or dead.
   Slow flashing: The battery is weak.
   Fast flashing: The battery is dead.
2. The tape is near the end.
   The flashing is slow.
3. The tape has run out.
   The flashing becomes rapid.
4. No tape has been inserted.
5. The tab on the tape is out (red).
6. Moisture condensation has occurred. (p. 36)
7. The video heads may be contaminated. (p. 33)
8. Some other trouble has occurred.
   Disconnect the power source and contact your Sony dealer or local authorized facility.
9. The lithium battery is weak or is not installed. (p. 29)
10. The LENS COVER switch is set to CLOSE.

Indicadores del visor

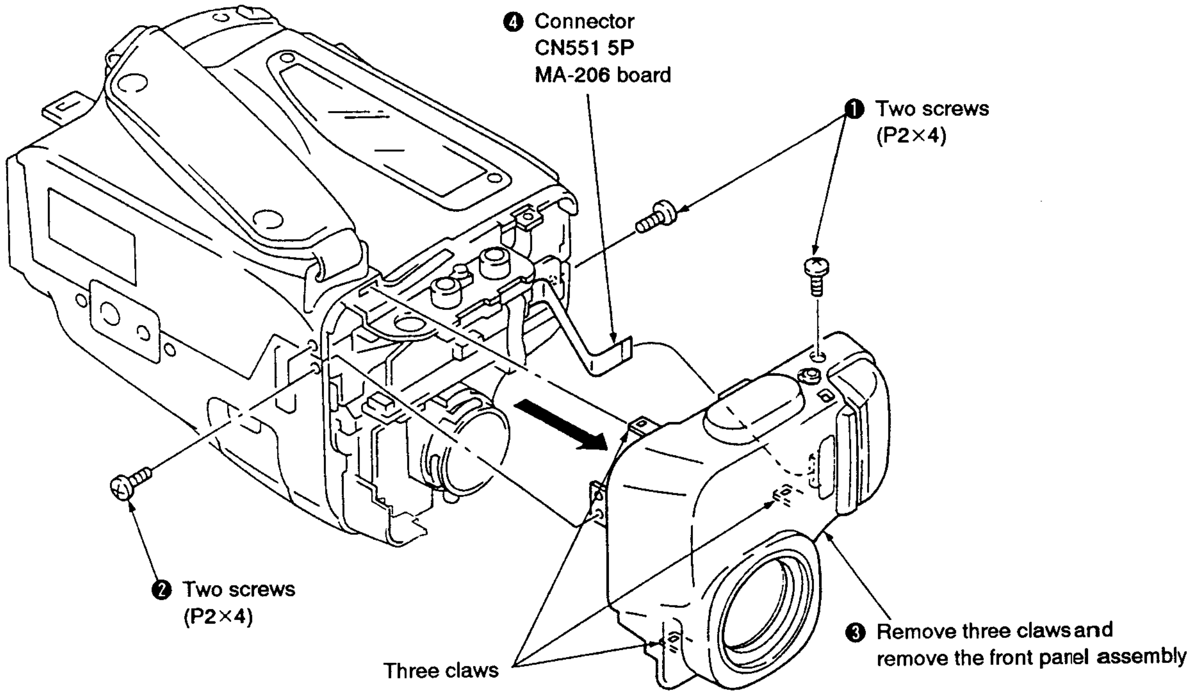
Indicadores de aviso

Si los indicadores parpadean en el visor, o si parpadea una lámpara de aviso en la videocámara, compruebe lo siguiente:

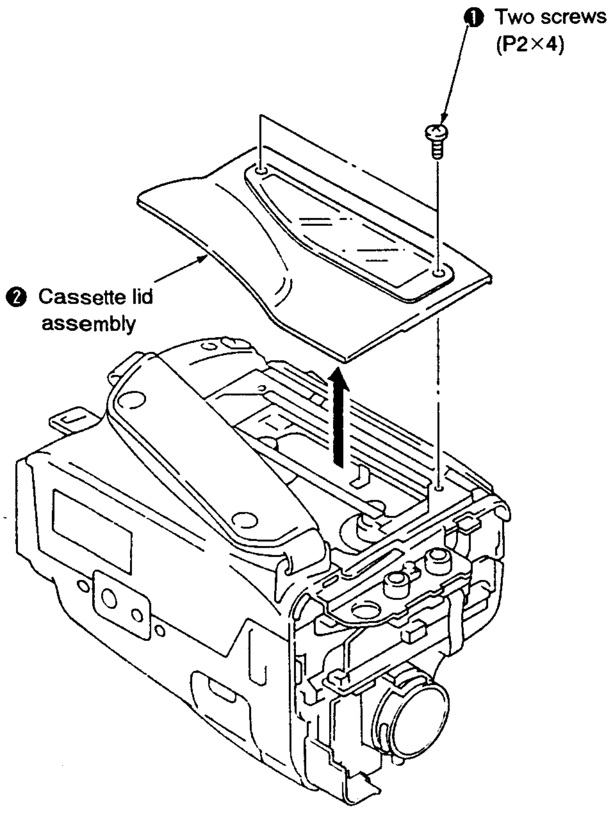
1. La batería está casi agotada o agotada completamente.
   Parpadeo lento: La batería está casi agotada.
   Parpadeo rápido: La batería está agotada.
2. La cinta está casi acabada.
   El parpadeo es lento.
3. La cinta ha llegado al final.
   El parpadeo es más rápido.
4. No se ha introducido una cinta.
5. La lengüeta de la cinta está deslizada (puede verse el color rojo).
6. Se ha producido condensación. (Página 36)
7. Las cabezas de vídeo pueden estar sucias. (Página 33)
8. Se ha producido otro problema.
   Desconecte la fuente de alimentación y póngase en contacto con su concesionario Sony o con el centro de reparaciones autorizado por Sony más cercano.
9. La pila de litio está agotada o no ha sido instalada. (Página 29)
10. El conmutador LENS COVER está en CLOSE.

SECTION 2
DISASSEMBLY

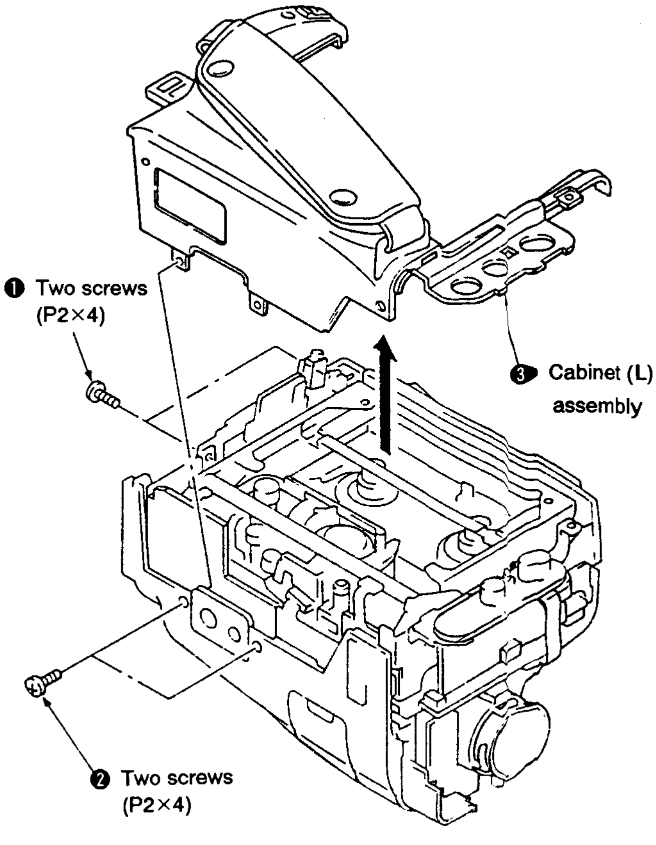
2-1. REMOVAL OF FRONT PANEL ASSEMBLY


④ Connector
CN551 5P
MA-206 board
① Two screws
(P2×4)
② Two screws
(P2×4)
Three claws
③ Remove three claws and
remove the front panel assembly

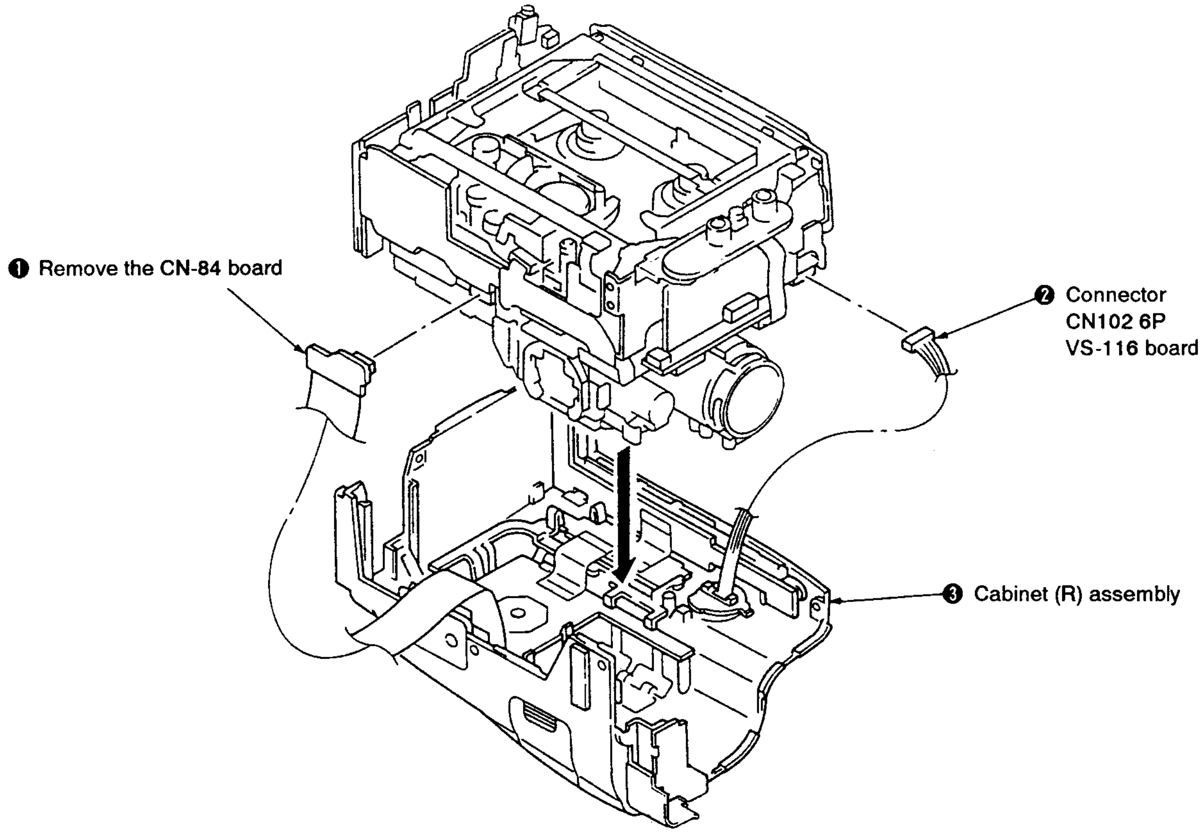
2-2. REMOVAL OF CASSETTE LID ASSEMBLY


① Two screws
(P2×4)
② Cassette lid
assembly

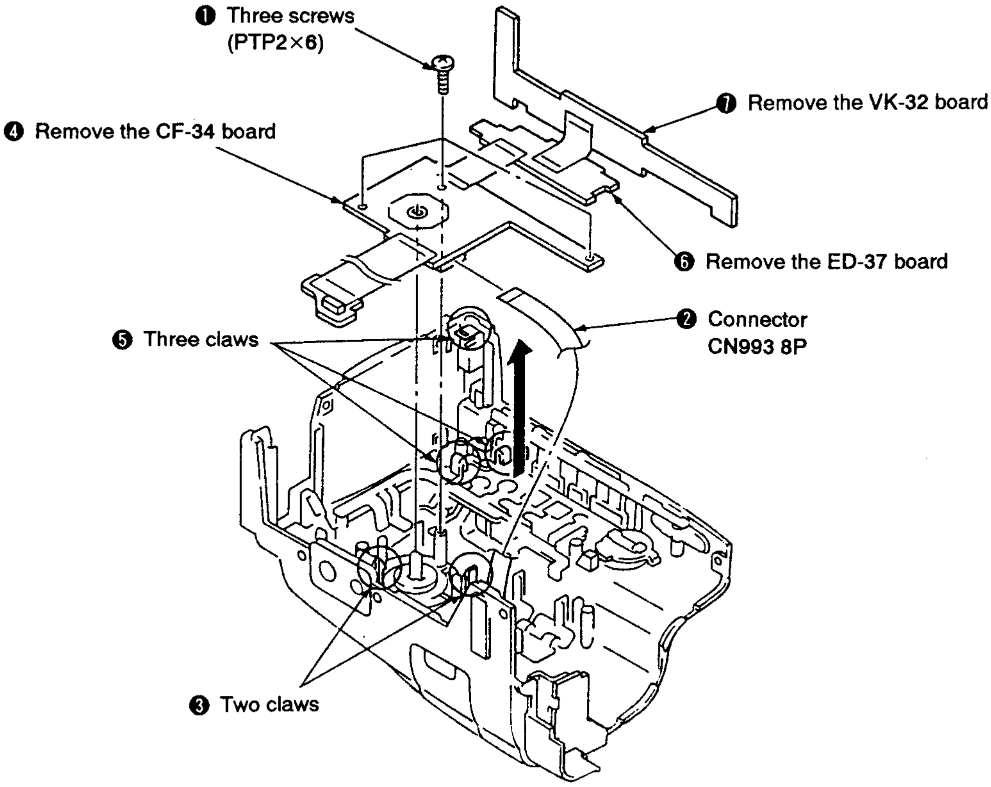
2-3. REMOVAL OF CABINET (L) ASSEMBLY


① Two screws
(P2×4)
③ Cabinet (L)
assembly
② Two screws
(P2×4)

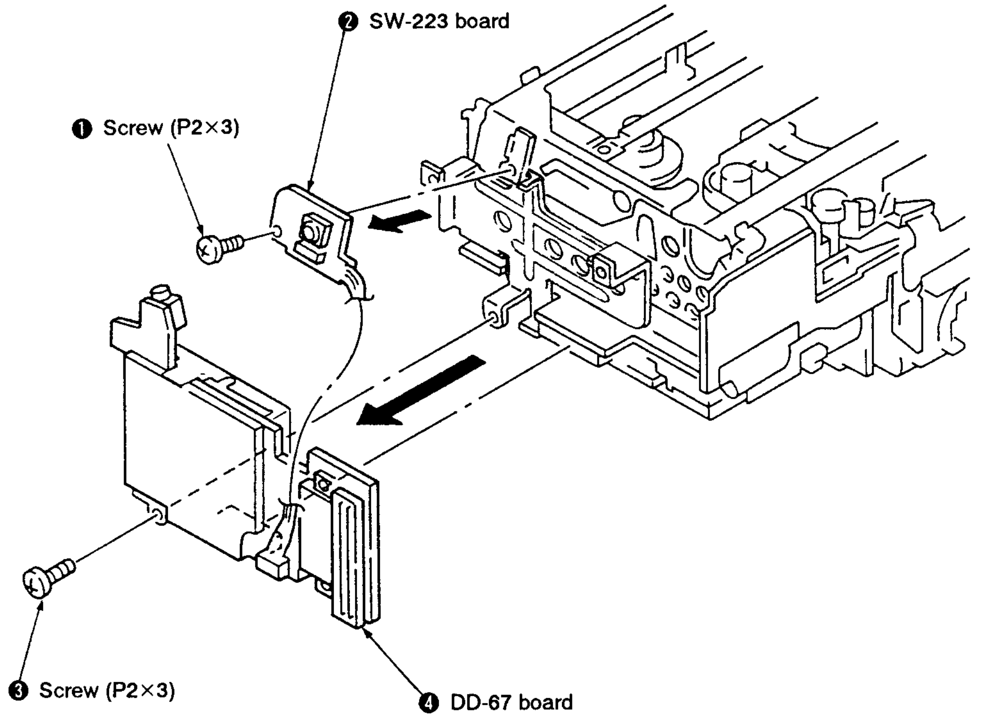
2-4. REMOVAL OF CABINET (R) ASSEMBLY


❶ Remove the CN-84 board
❷ Connector
CN102 6P
VS-116 board
❸ Cabinet (R) assembly

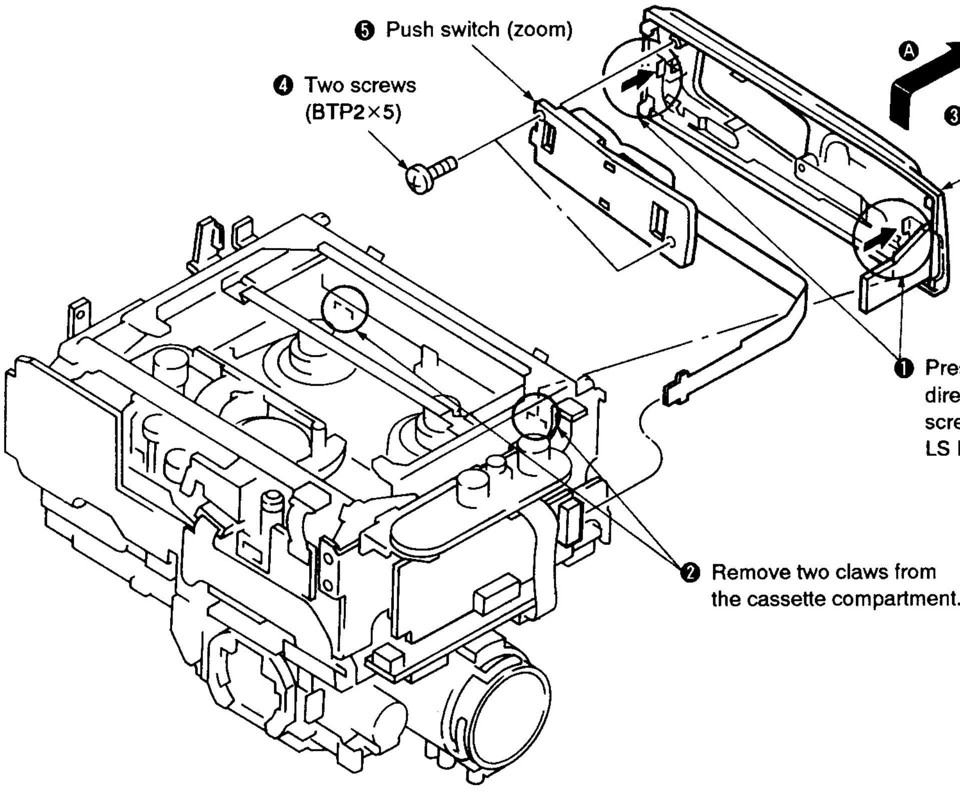
2-5. REMOVAL OF CF-34, ED-37 AND VK-32 BOARDS


❶ Three screws
(PTP2×6)
❹ Remove the CF-34 board
❼ Remove the VK-32 board
❻ Remove the ED-37 board
❺ Three claws
❷ Connector
CN993 8P
❸ Two claws

2-6. REMOVAL OF DD-67 AND SW-223 BOARDS


❷ SW-223 board
❶ Screw (P2×3)
❸ Screw (P2×3)
❹ DD-67 board

2-7. REMOVAL OF LS LID ASSEMBLY

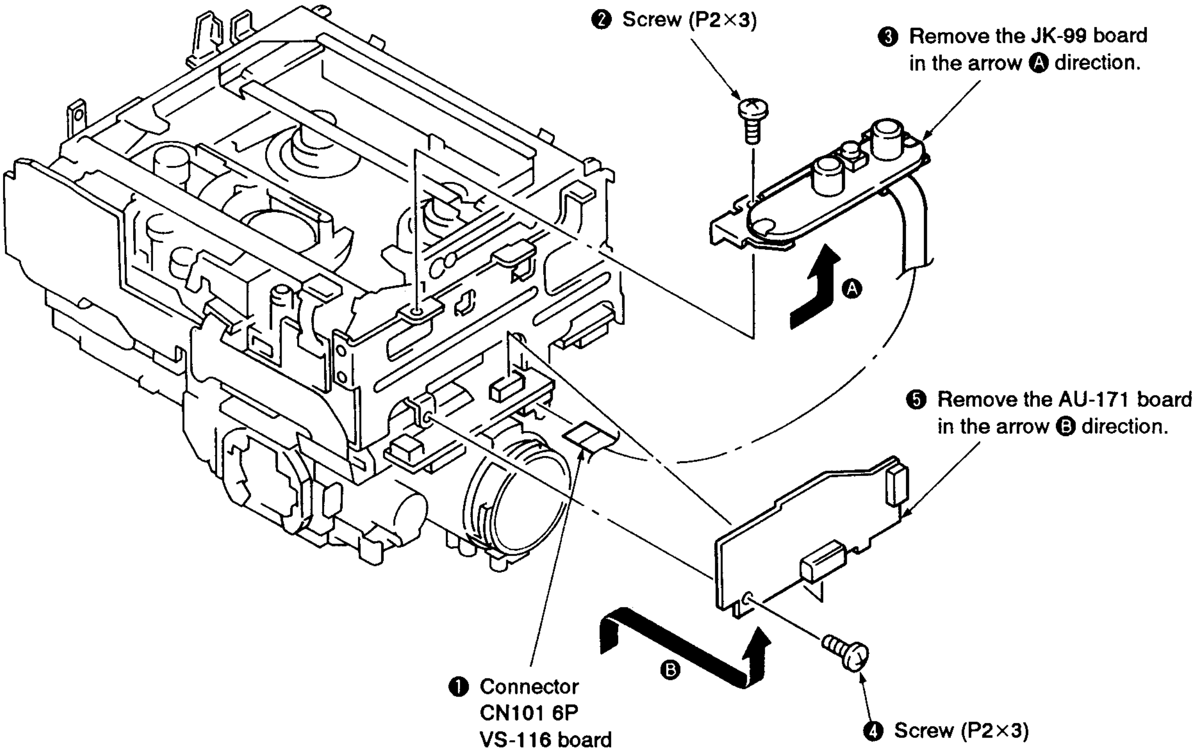

❺ Push switch (zoom)
❹ Two screws (BTP2×5)
Ⓐ

❸ Remove the LS lid assembly in the arrow Ⓐ direction.

❶ Press the two claws in the arrow direction with the precision screwdriver, etc. so that the LS lid assembly rises up slightly.

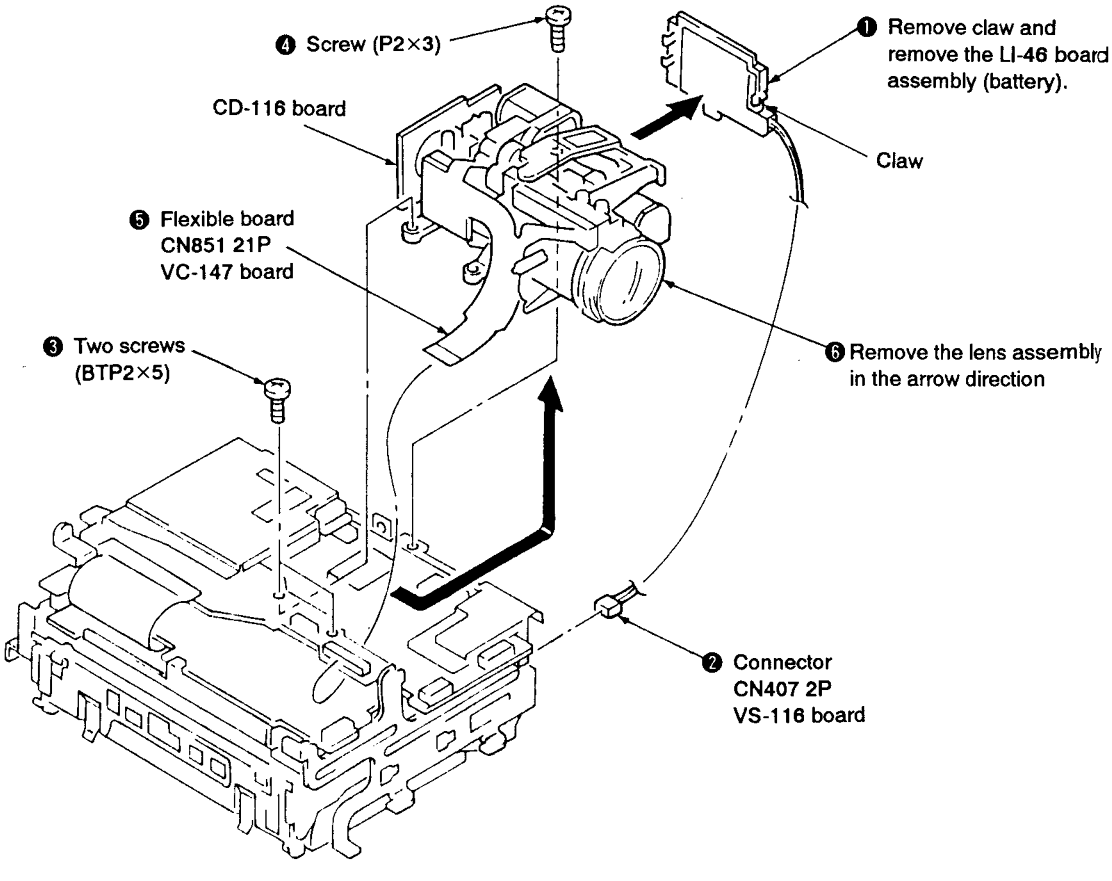
❷ Remove two claws from the cassette compartment.

2-8. REMOVAL OF JK-99 AND AU-171 BOARDS



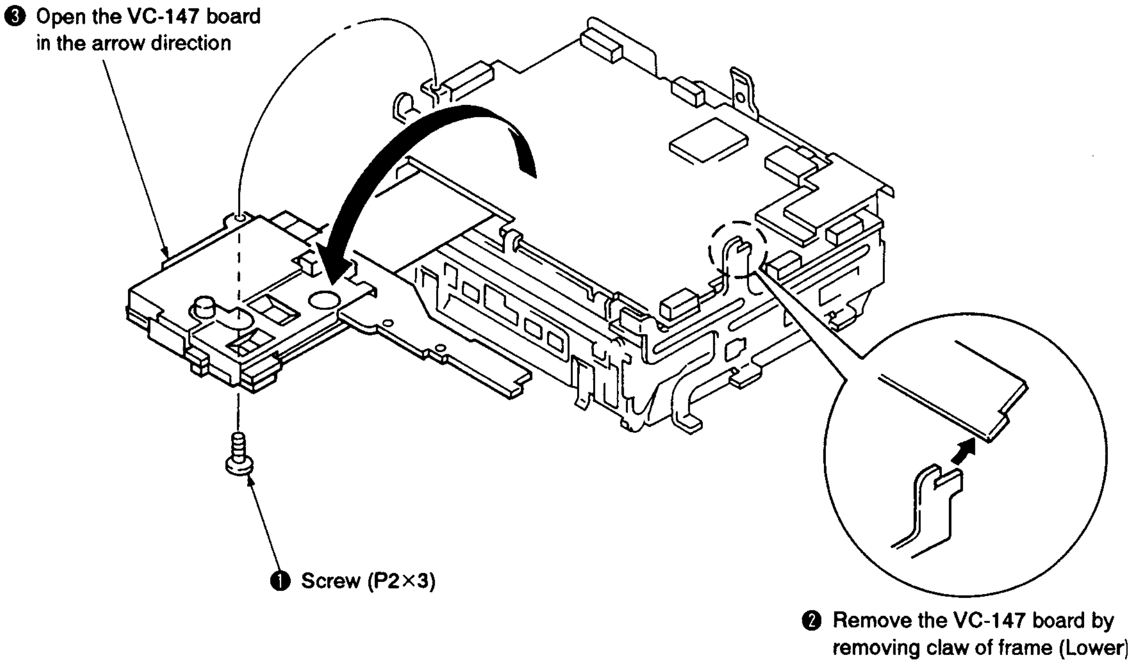
❷ Screw (P2×3)
❸ Remove the JK-99 board in the arrow Ⓐ direction.
Ⓐ
❺ Remove the AU-171 board in the arrow Ⓑ direction.
Ⓑ
❶ Connector CN101 6P VS-116 board
❹ Screw (P2×3)

2-9. REMOVAL OF LENS ASSEMBLY (CD-116 BOARD)

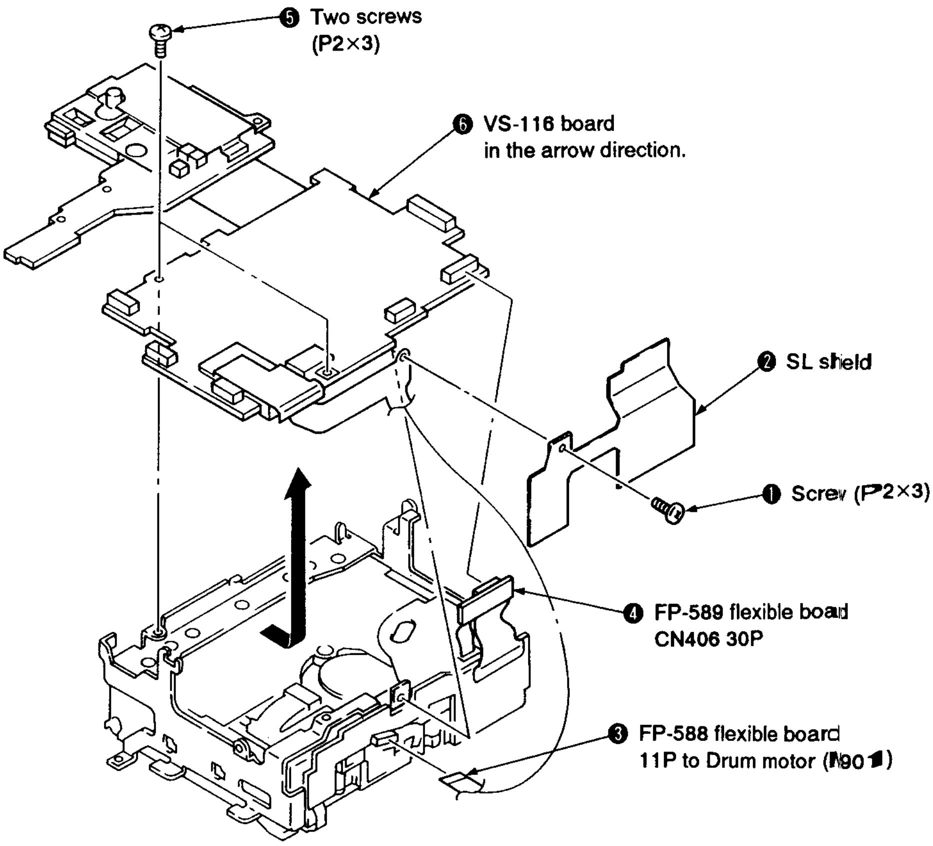


❹ Screw (P2×3)
CD-116 board
❶ Remove claw and remove the LI-46 board assembly (battery).
Claw
❺ Flexible board CN851 21P VC-147 board
❻ Remove the lens assembly in the arrow direction
❸ Two screws (BTP2×5)
❷ Connector CN407 2P VS-116 board

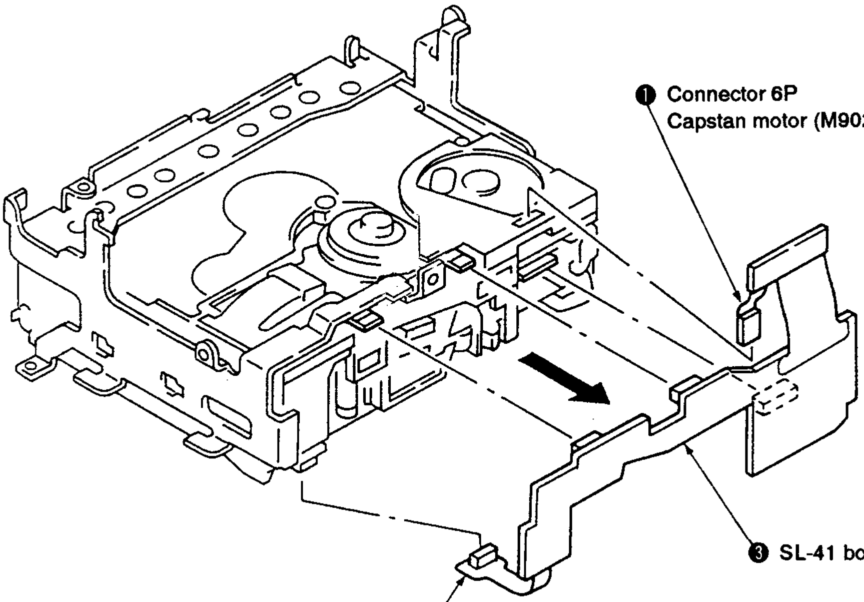
2-10. OPENING OF VC-147 BOARD


❸ Open the VC-147 board
in the arrow direction
❶ Screw (P2×3)
❷ Remove the VC-147 board by
removing claw of frame (Lower)

2-11. REMOVAL OF VS-116 BOARD


❺ Two screws
(P2×3)
❻ VS-116 board
in the arrow direction.
❷ SL shield
❶ Screw (P2×3)
❹ FP-589 flexible board
CN406 30P
❸ FP-588 flexible board
11P to Drum motor (M901)

2-12. REMOVAL OF SL-41 BOARD

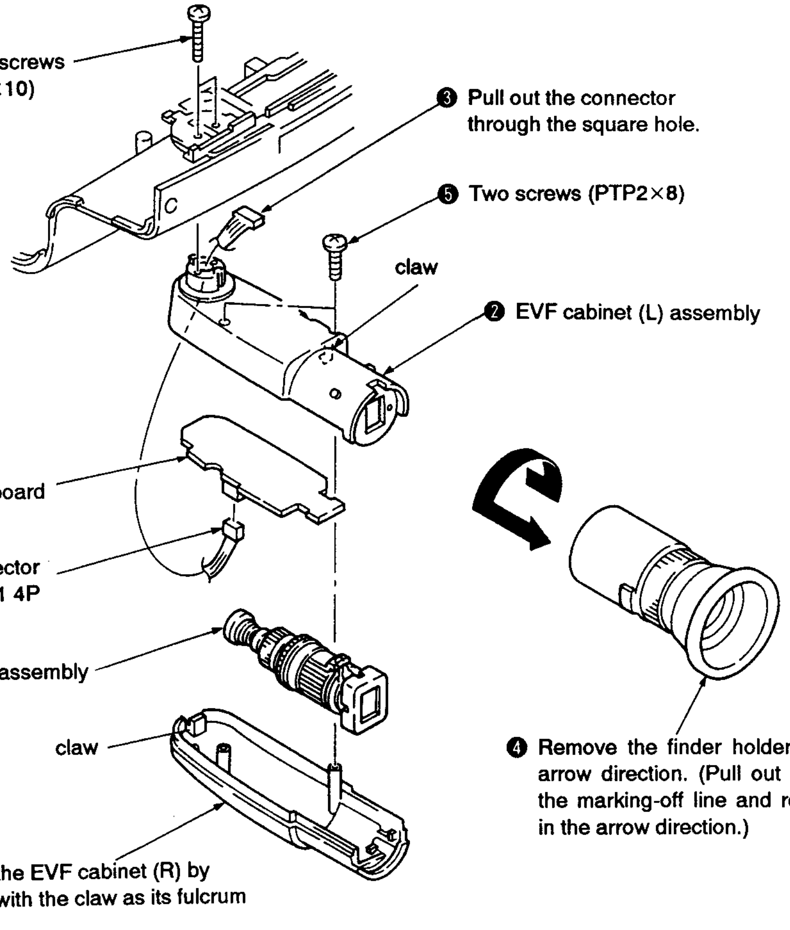


❶ Connector 6P
Capstan motor (M902)

❷ Connector 4P
Loading motor (M903)

❸ SL-41 board

2-13. REMOVAL OF EVF ASSEMBLY (VF-42 BOARD)



❶ Two screws
(P2×10)

❷ EVF cabinet (L) assembly

❸ Pull out the connector
through the square hole.

❹ Remove the finder holder assembly in the arrow direction. (Pull out to the position of the marking-off line and remove by turning in the arrow direction.)

❺ Two screws (PTP2×8)

❻ Remove the EVF cabinet (R) by
lifting up with the claw as its fulcrum

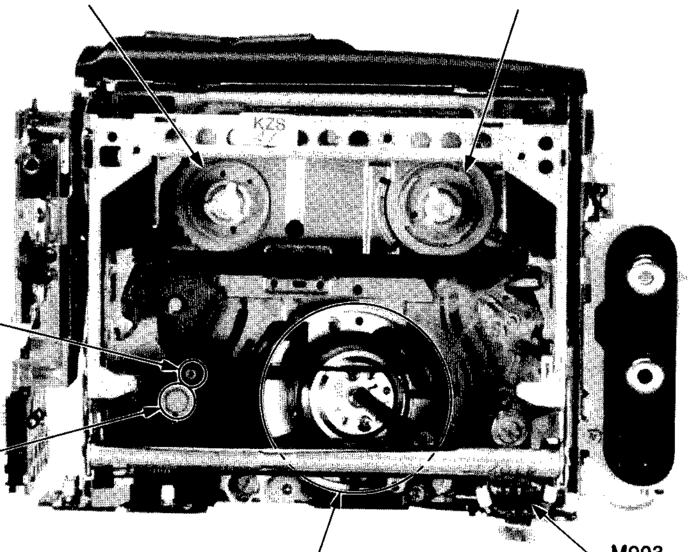
❼ CRT assembly

❽ Remove a claw and
remove the VF-42 board

❾ Connector
CN501 4P

2-14. INTERNAL VIEWS

— Left side —



T reel table assembly
X-3941-274-1

S reel table assembly
X-3943-676-1

Pinch roller

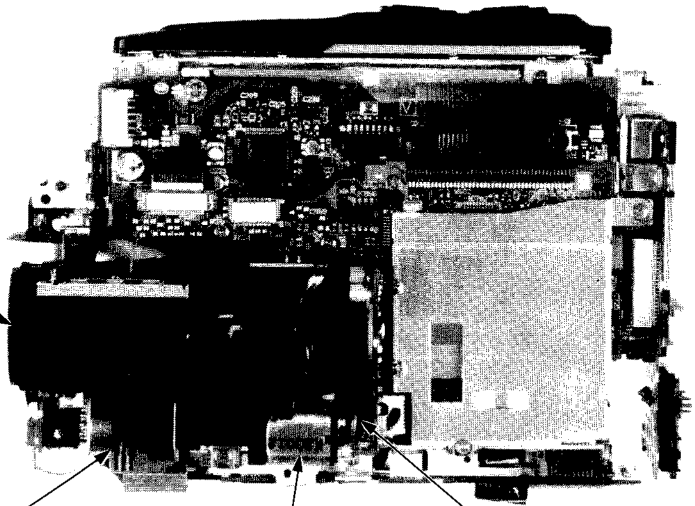
M902
Capstan motor (SCE-0101A)
8-835-477-01

M901
Drum assembly (DGH-90A-R)
A-7048-585-A
Upper drum assembly (DGR-90-R)
A-7049-521-A

M903
Loading motor assembly
A-7040-304-A

— Right side —

TYPE A



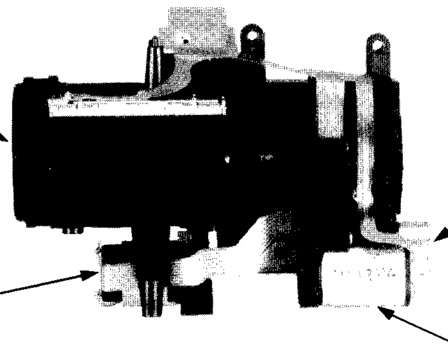
Zoom lens (VCL-6210WC)
1-547-548-11 (TYPE A)

M904
IRIS meter assembly
3-708-494-11 (TYPE A)

M906
Zoom motor assembly
3-708-492-01 (TYPE A)

M905
Focus motor assembly
3-708-491-01 (TYPE A)

TYPE B



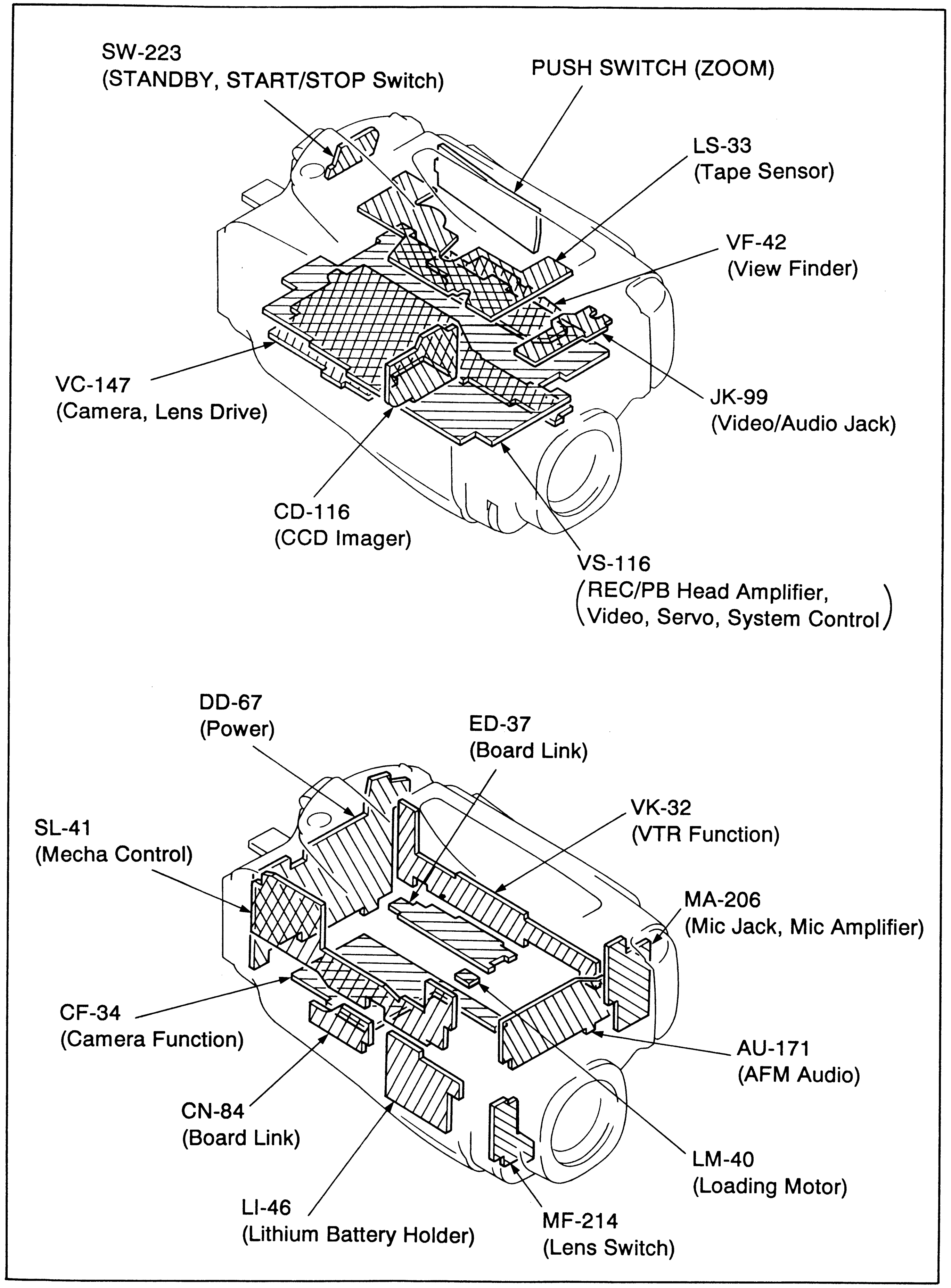
Zoom lens (VCL-6210WF)
1-547-630-11 (TYPE B)

M905
Focus motor assembly
3-708-656-01 (TYPE B)

M904
IRIS meter assembly
3-708-653-01 (TYPE B)

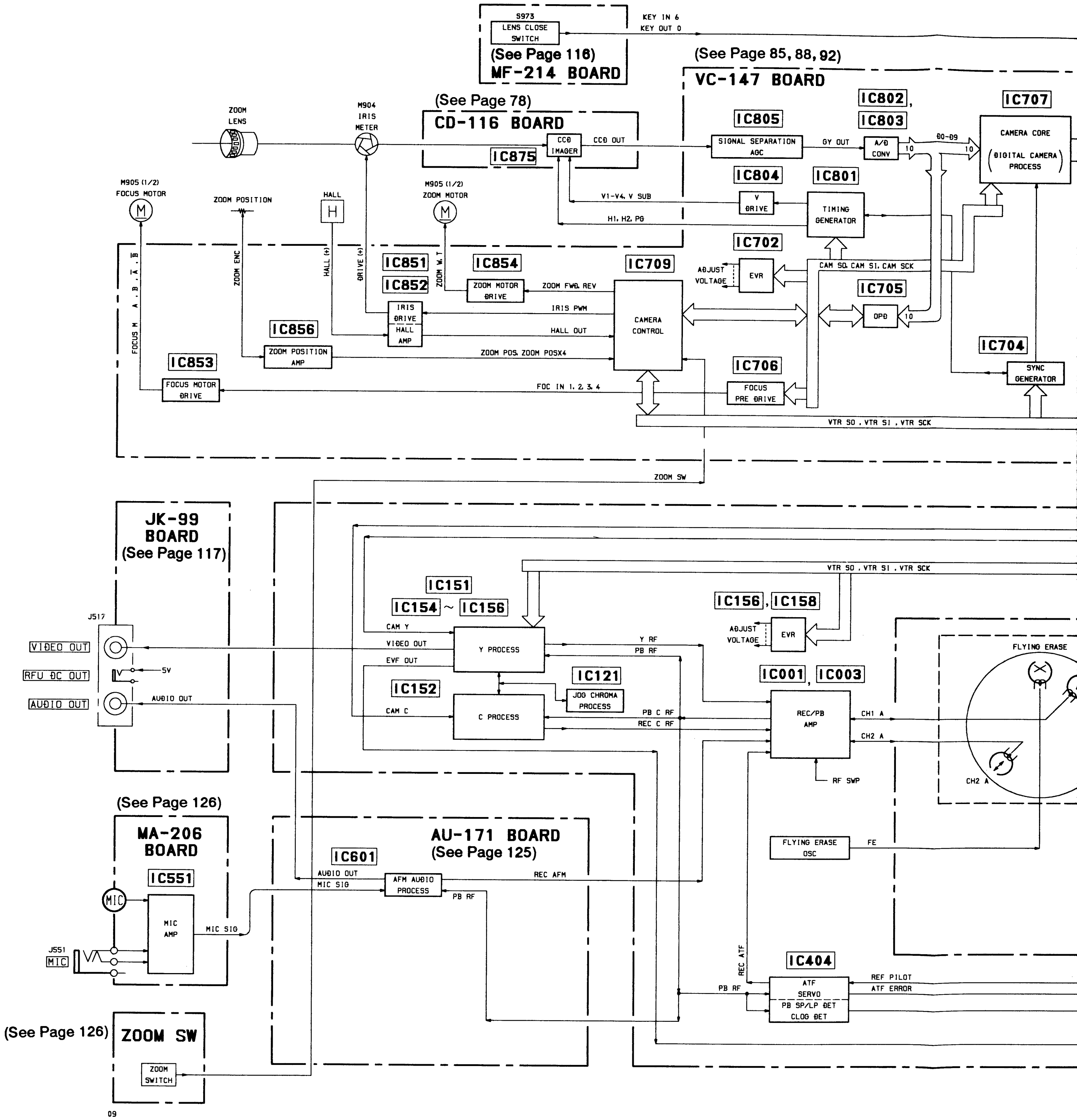
M906
Zoom motor assembly
3-708-654-01 (TYPE B)

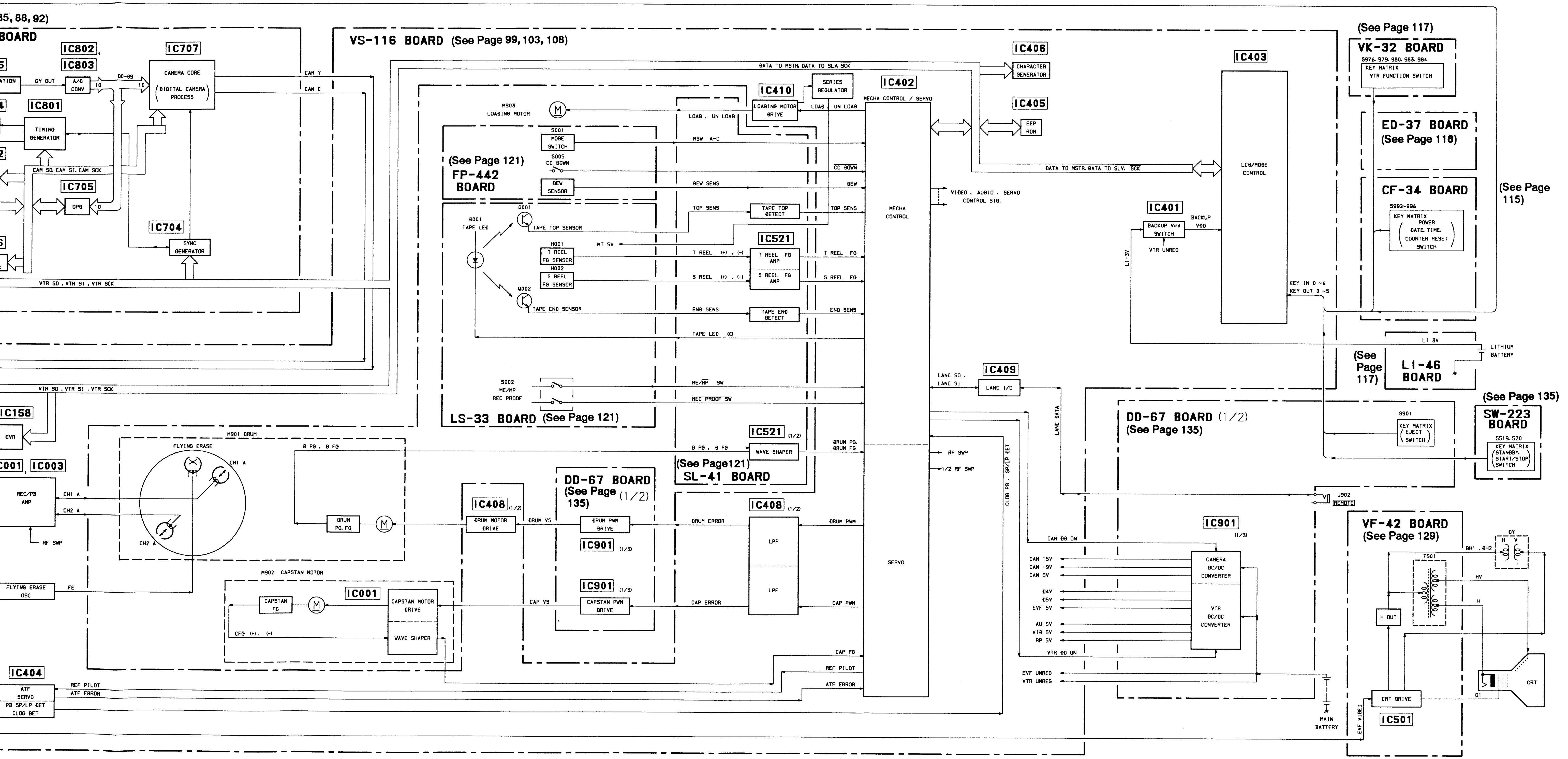
2-15. CIRCUIT BOARDS LOCATION


SW-223
(STANDBY, START/STOP Switch)
PUSH SWITCH (ZOOM)
LS-33
(Tape Sensor)
VF-42
(View Finder)
VC-147
(Camera, Lens Drive)
JK-99
(Video/Audio Jack)
CD-116
(CCD Imager)
VS-116
(REC/PB Head Amplifier, Video, Servo, System Control)
DD-67
(Power)
ED-37
(Board Link)
VK-32
(VTR Function)
SL-41
(Mecha Control)
MA-206
(Mic Jack, Mic Amplifier)
CF-34
(Camera Function)
AU-171
(AFM Audio)
CN-84
(Board Link)
LM-40
(Loading Motor)
LI-46
(Lithium Battery Holder)
MF-214
(Lens Switch)

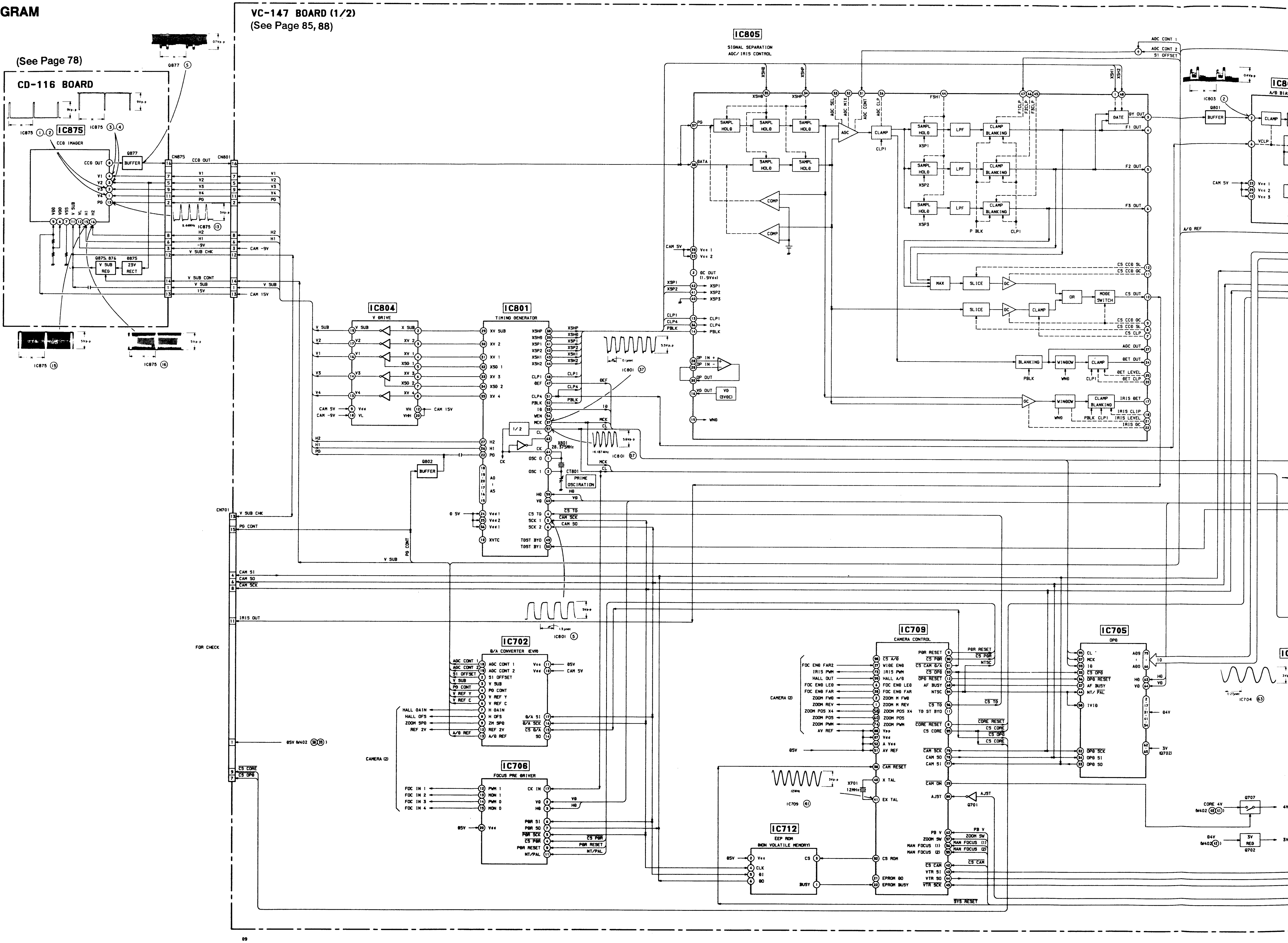
SECTION 3
BLOCK DIAGRAMS

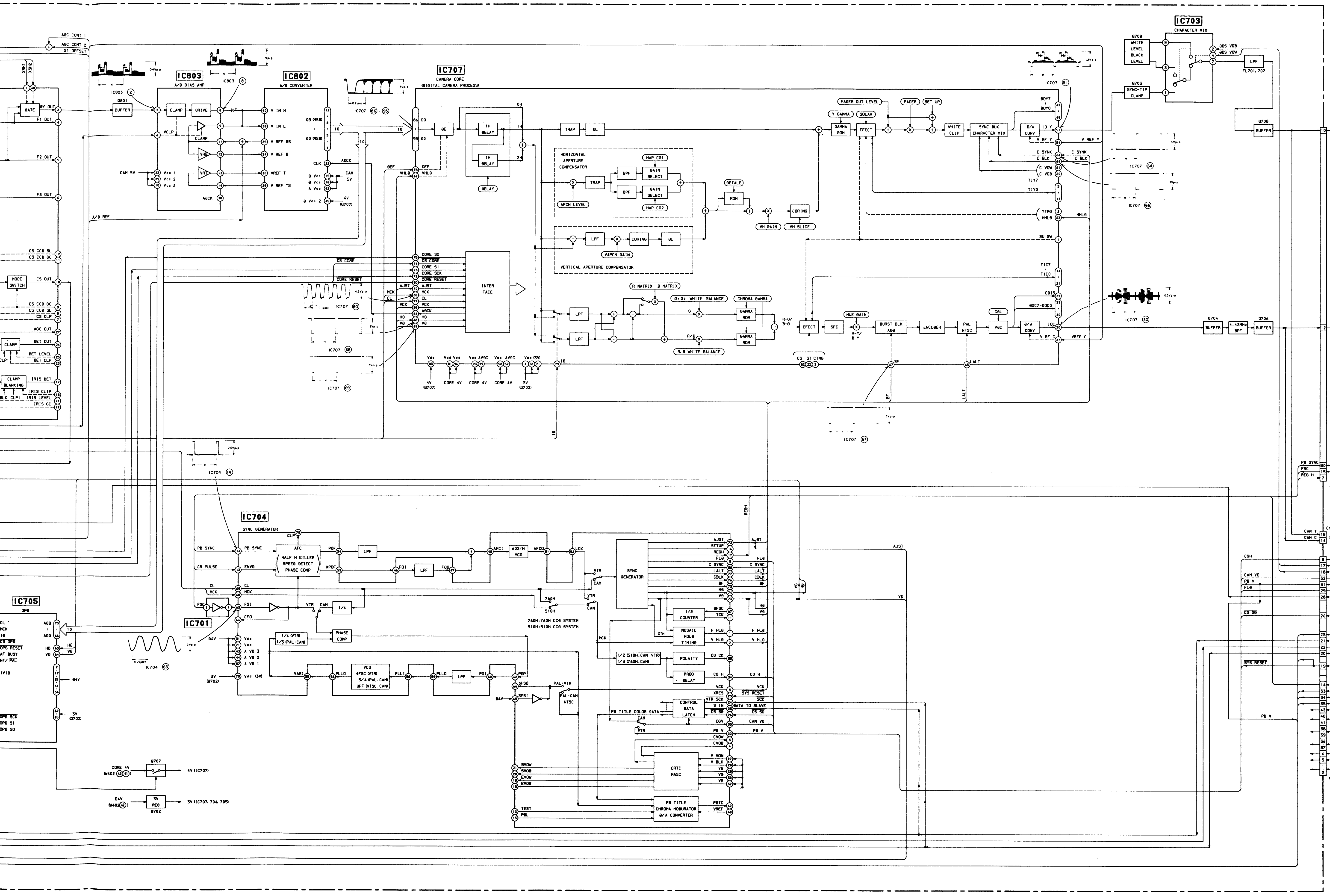
3-1. OVERALL BLOCK DIAGRAM


S973
LENS CLOSE SWITCH
(See Page 116)
MF-214 BOARD
KEY IN 6
KEY OUT 0
ZOOM LENS
M904 IRIS METER
(See Page 78)
CD-116 BOARD
IC875
CCD IMAGER
CCD OUT
M905 (1/2) FOCUS MOTOR
ZOOM POSITION
HALL
M905 (1/2) ZOOM MOTOR
V1-V4, V SUB
H1, H2, PG
FOCUS M A, B, Ā, B̄
ZOOM ENC
HALL (+)
DRIVE (+)
ZOOM W, T
IC851
IC852
IRIS DRIVE
HALL AMP
IC854
ZOOM MOTOR DRIVE
ZOOM FWD, REV
IRIS PWM
HALL OUT
IC856
ZOOM POSITION AMP
ZOOM POS, ZOOM POSX4
IC853
FOCUS MOTOR DRIVE
FOC IN 1, 2, 3, 4
IC709
CAMERA CONTROL
(See Page 85, 88, 92)
VC-147 BOARD
IC805
SIGNAL SEPARATION AGC
GY OUT
IC802, IC803
A/D CONV
10
D0-D9
10
IC707
CAMERA CORE (DIGITAL CAMERA PROCESS)
IC804
V DRIVE
IC801
TIMING GENERATOR
IC702
ADJUST VOLTAGE
EVR
CAM SO, CAM SI, CAM SCK
IC705
OPD
10
IC704
SYNC GENERATOR
IC706
FOCUS PRE DRIVE
VTR SO, VTR SI, VTR SCK
ZOOM SW
JK-99 BOARD
(See Page 117)
J517
VIDEO OUT
RFU DC OUT
AUDIO OUT
5V
AUDIO OUT
VTR SO, VTR SI, VTR SCK
IC151
IC154 ~ IC156
CAM Y
VIDEO OUT
EVF OUT
Y PROCESS
Y RF
PB RF
IC121
JOG CHROMA PROCESS
IC152
CAM C
C PROCESS
PB C RF
REC C RF
IC156, IC158
ADJUST VOLTAGE
EVR
IC001, IC003
REC/PB AMP
CH1 A
CH2 A
RF SWP
FLYING ERASE
CH2 A
FLYING ERASE OSC
FE
(See Page 126)
MA-206 BOARD
IC551
MIC
MIC AMP
MIC SIG
J551
MIC
AU-171 BOARD
(See Page 125)
IC601
AUDIO OUT
MIC SIG
AFM AUDIO PROCESS
REC AFM
PB RF
REC ATF
IC404
ATF SERVO
PB SP/LP DET
CLOG DET
PB RF
REF PILOT
ATF ERROR
(See Page 126)
ZOOM SW
ZOOM SWITCH
09

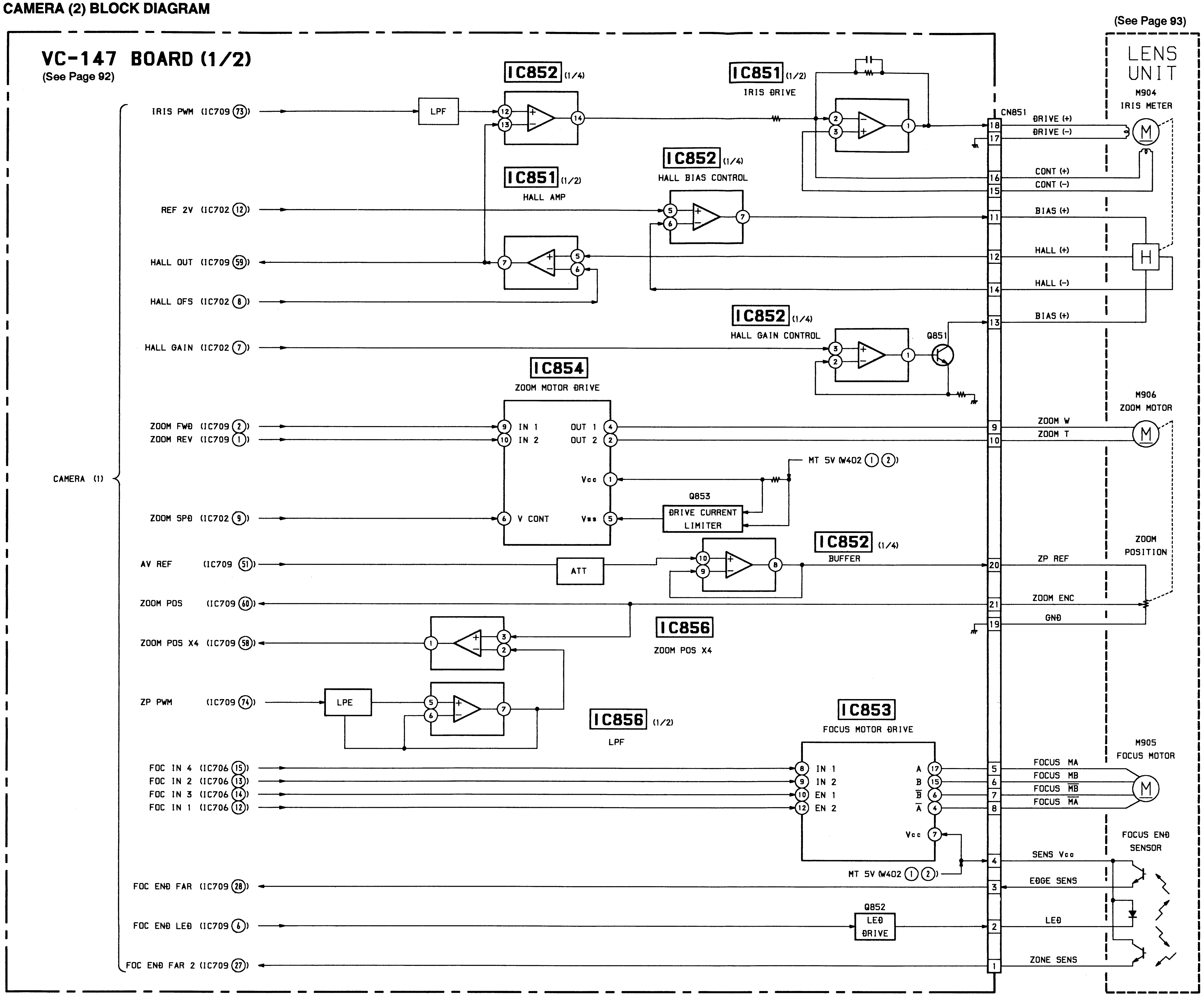

35, 88, 92)
BOARD
IC802, IC803
IC707
CAMERA CORE (DIGITAL CAMERA PROCESS)
A/D CONV
GY OUT
D0-D9
IC801
TIMING GENERATOR
CAM SO, CAM SI, CAM SCK
IC705
OPD
IC704
SYNC GENERATOR
CAM Y
CAM C
VTR SO, VTR SI, VTR SCK
IC158
EVR
IC001, IC003
REC/PB AMP
CH1 A
CH2 A
RF SWP
FLYING ERASE OSC
FE
IC404
ATF SERVO
PB SP/LP DET
CLOG DET
REF PILOT
ATF ERROR
VS-116 BOARD (See Page 99, 103, 108)
DATA TO MSTR, DATA TO SLV, SCK
IC406
CHARACTER GENERATOR
IC405
EEP ROM
IC410
LOADING MOTOR DRIVE
SERIES REGULATOR
IC402
MECHA CONTROL / SERVO
M903 LOADING MOTOR
LOAD, UN LOAD
MSW A-C
(See Page 121)
FP-442 BOARD
S001 MODE SWITCH
S005 CC DOWN
DEW SENSOR
DEW SENS
CC DOWN
DEW
D001 TAPE LED
Q001 TAPE TOP SENSOR
TOP SENS
TAPE TOP DETECT
IC521
H001 T REEL FG SENSOR
H002 S REEL FG SENSOR
MT 5V
T REEL (+), (-)
S REEL (+), (-)
T REEL FG AMP
S REEL FG AMP
T REEL FG
S REEL FG
Q002 TAPE END SENSOR
END SENS
TAPE END DETECT
TAPE LED ON
MECHA CONTROL
S002 ME/MP REC PROOF
ME/MP SW
REC PROOF SW
LS-33 BOARD (See Page 121)
VIDEO, AUDIO, SERVO CONTROL SIG.
IC521 (1/2)
WAVE SHAPER
D PG, D FG
DRUM PG, DRUM FG
(See Page121)
SL-41 BOARD
RF SWP
1/2 RF SWP
M901 DRUM
FLYING ERASE
DRUM PG, FG
IC408 (1/2)
DRUM MOTOR DRIVE
DRUM VS
DD-67 BOARD (See Page 135) (1/2)
DRUM PWM DRIVE
IC901 (1/3)
IC408 (1/2)
DRUM ERROR
LPF
DRUM PWM
M902 CAPSTAN MOTOR
CAPSTAN FG
IC001
CAPSTAN MOTOR DRIVE
WAVE SHAPER
CFG (+), (-)
CAP VS
CAPSTAN PWM DRIVE
CAP ERROR
CAP PWM
CAP FG
REF PILOT
ATF ERROR
SERVO
CLOG PB, SP/LP DET
IC403
LCD/MODE CONTROL
IC401
BACKUP Vcc SWITCH
BACKUP VDD
VTR UNREG
LI-3V
KEY IN 0 - 6
KEY OUT 0 - 5
LANC SO, LANC SI
IC409
LANC I/O
LANC DATA
(See Page 117)
VK-32 BOARD
S976, 979, 980, 983, 984
KEY MATRIX VTR FUNCTION SWITCH
ED-37 BOARD (See Page 116)
CF-34 BOARD
(See Page 115)
S992-996
KEY MATRIX POWER DATE, TIME, COUNTER RESET SWITCH
LI 3V
LITHIUM BATTERY
(See Page 117)
LI-46 BOARD
(See Page 135)
SW-223 BOARD
S519, 520
KEY MATRIX (STANDBY, START/STOP SWITCH)
DD-67 BOARD (1/2) (See Page 135)
S901
KEY MATRIX (EJECT SWITCH)
J902 REMOTE
CAM DD ON
IC901 (1/3)
CAM 15V
CAM -9V
CAM 5V
D4V
D5V
EVF 5V
AU 5V
VID 5V
RP 5V
VTR DD ON
CAMERA DC/DC CONVERTER
VTR DC/DC CONVERTER
EVF UNREG
VTR UNREG
MAIN BATTERY
VF-42 BOARD (See Page 129)
DY
DH1, DH2
H V
T501
HV
H
H OUT
CRT
G1
EVF VIDEO
CRT DRIVE
IC501

3-2. CAMERA (1) BLOCK DIAGRAM

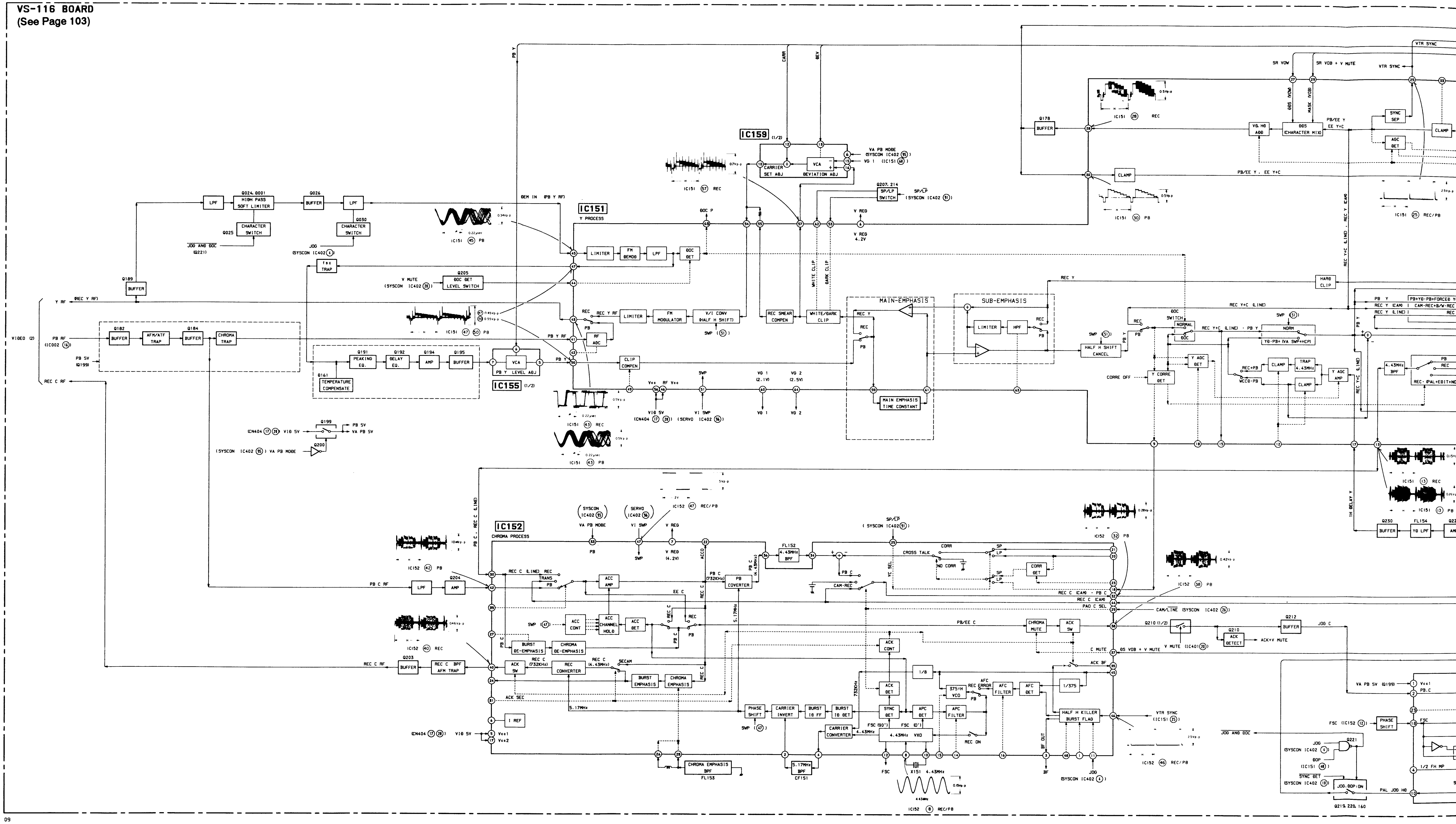

(See Page 78)
CD-116 BOARD
IC875
CCD IMAGER
Q877
BUFFER
CCD OUT
V SUB REG
23V RECT
CN875
CN801
VC-147 BOARD (1/2)
(See Page 85, 88)
IC805
SIGNAL SEPARATION
AGC/IRIS CONTROL
SAMPL HOLD
AGC
CLAMP
LPF
CLAMP BLANKING
COMP
GATE
MAX
SLICE
OR
MODE SWITCH
BLANKING
WINDOW
IC804
V DRIVE
IC801
TIMING GENERATOR
X801 28.375MHz
CT801
PRIME OSCIRATION
Q802
BUFFER
CN701
FOR CHECK
IC702
D/A CONVERTER (EVR)
IC706
FOCUS PRE DRIVER
IC709
CAMERA CONTROL
X701 12MHz
IC712
EEP ROM
(NON VOLATILE MEMORY)
IC705
DPB
Q701
Q707
Q702
3V REG
IC803
Q801
BUFFER
CAMERA (2)
A/D REF
CAM 5V
CAM -9V
CAM 15V
V SUB
V SUB CHK
PG CONT
CAM SI
CAM SO
CAM SCK
IRIS OUT
CS CORE
CS DPB
SYS RESET

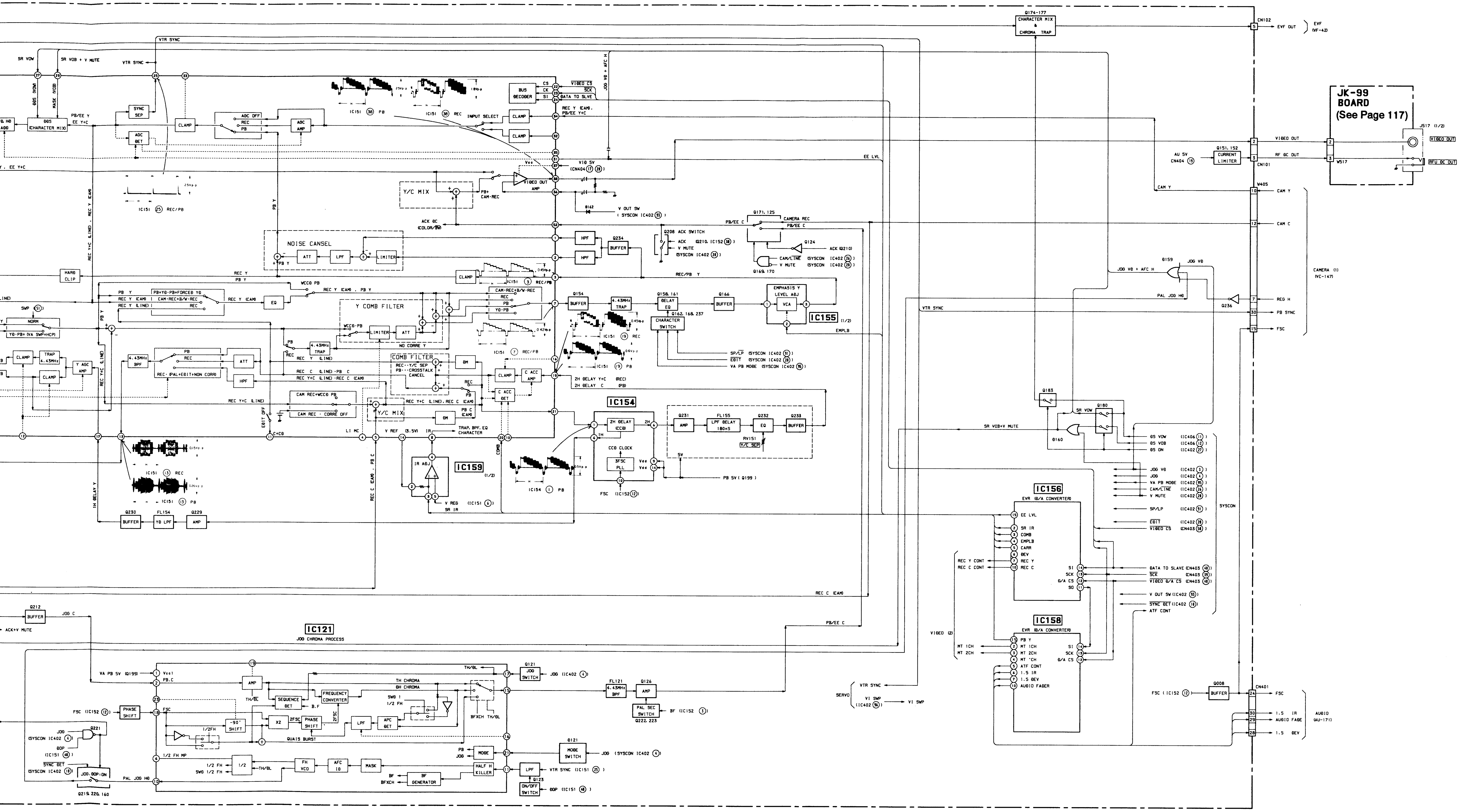

IC803
A/D BIAS AMP
IC802
A/D CONVERTER
IC707
CAMERA CORE
(DIGITAL CAMERA PROCESS)
IC703
CHARACTER MIX
IC704
SYNC GENERATOR
IC705
OPD
IC701
Q801
BUFFER
CLAMP
DRIVE
VRB
VRT
V IN H
V IN L
V REF BS
V REF B
VREF T
V REF TS
CAM 5V
Vcc 1
Vcc 2
Vcc 3
ADCK
CLK
D Vcc
A Vcc
D Vcc 2
4V (Q707)
D9 (MSB)
D0 (MSB)
ADC CONT 1
ADC CONT 2
S1 OFFSET
GATE
GY OUT
F1 OUT
F2 OUT
F3 OUT
A/D REF
CS CCD SL
CS CCD DC
MODE SWITCH
CS OUT
CS CLP
AGC OUT
DET OUT
CLAMP
DET LEVEL
DET CLP
CLAMP BLANKING
IRIS DET
IRIS CLIP
IRIS LEVEL
IRIS DC
DE
1H DELAY
DELAY
TRAP
DL
HORIZONTAL APERTURE COMPENSATOR
APCN LEVEL
HAP CO1
HAP CO2
BPF
GAIN SELECT
VERTICAL APERTURE COMPENSATOR
LPF
CORING
VAPCN GAIN
DETAIL
ROM
VH GAIN
VH SLICE
FADER OUT LEVEL
FADER
SET UP
Y GAMMA
SOLAR
GAMMA ROM
EFECT
WHITE CLIP
SYNC BLK CHARACTER MIX
D/A CONV
V REF Y
C SYNC
C BLK
C VDW
C VOB
TIY7
TIY0
YTMG
HHLD
DU SW
TIC7
TIC0
CD15
DDC7-DDC0
IOC
VREF C
R MATRIX B MATRIX
Gr Gb WHITE BALANCE
R.B WHITE BALANCE
CHROMA GAMMA
R-G/B-G
SFC
HUE GAIN
R-Y/B-Y
BURST BLK ADD
ENCODER
PAL NTSC
CDL
VDC
CS ST CTMG
LALT
DF
INTER FACE
CORE SO
CS CORE
CORE SI
CORE SCK
CORE RESET
AJST
MCK
CL
VCK
ADCK
HD
VD
VHLD
DEF
CORE 4V
3V (Q702)
Q709
WHITE LEVEL
BLACK LEVEL
Q703
SYNC-TIP CLAMP
DDS VDB
DDS VDW
LPF
FL701, 702
Q708
BUFFER
CAM Y
Q704
4.43MHz BPF
Q706
CAM C
VIDEO (1)
(VS-116)
PB SYNC
FSC
REG H
W402
CN701
FOR CHECK
CDH
CAM VD
PB V
FLD
TO STBY 1
CS SO
CS CAM
DATA TO SLAVE
DATA TO MSTR
SCK
SYS RESET
SYSCON
(VS-116)
CR PULSE
MAN FOCUS (1)
MAN FOCUS (2)
ZOOM 5V
D4V
CORE 4V
D5V
CAM 5V
CAM -9V
CAM 15V
MT 5V
POWER
(VS-116)
CR PULSE
AFC
HALF H KILLER
SPEED DETECT
PHASE COMP
ENVD
PDF
XPDF
FDI
FDO
AFCI
AFCO
602fH VCO
LCK
VTR
CAM
760H
510H
760H:760H CCD SYSTEM
510H:510H CCD SYSTEM
FSI
CFO
1/4
PHASE COMP
1/4 (VTR)
1/5 (PAL-CAM)
VCO
4FSC (VTR)
5/4 (PAL.CAM)
OFF (NTSC.CAM)
PLLO
PLLI
PDI
PDP
VARI
FSCO
PAL-VTR
PAL-CAM NTSC
SYNC GENERATOR
SETUP
REGH
C SYNC
CBLK
1/3 COUNTER
DFSC
TCK
MOSAIC HOLD TIMING
H HLD
V HLD
1/2 (510H.CAM VTR)
1/3 (760H.CAM)
POLAITY
CD CK
PROG DELAY
CD H
XRES
VTR SCK
S IN
CONTROL DATA LATCH
PB TITLE COLOR DATA
CGV
CVDW
CVDB
CRTC MASC
V MON
V BLK
VB
VG
VR
SVDW
SVDB
EVDW
EVDB
PB TITLE CHROMA MODURATOR D/A CONVERTER
TEST
PBL
PBTC
VREF
CORE 4V
Q707
4V (IC707)
D4V
3V REG
Q702
3V (IC707, 704, 705)
IC707 (51)
IC707 (64)
IC707 (66)
IC707 (30)
IC707 (67)
IC707 (68)
IC707 (69)
IC707 (80)
IC707 (86)-(95)
IC704 (14)
IC704 (63)
IC803 (2)
IC803 (8)

3-3. CAMERA (2) BLOCK DIAGRAM

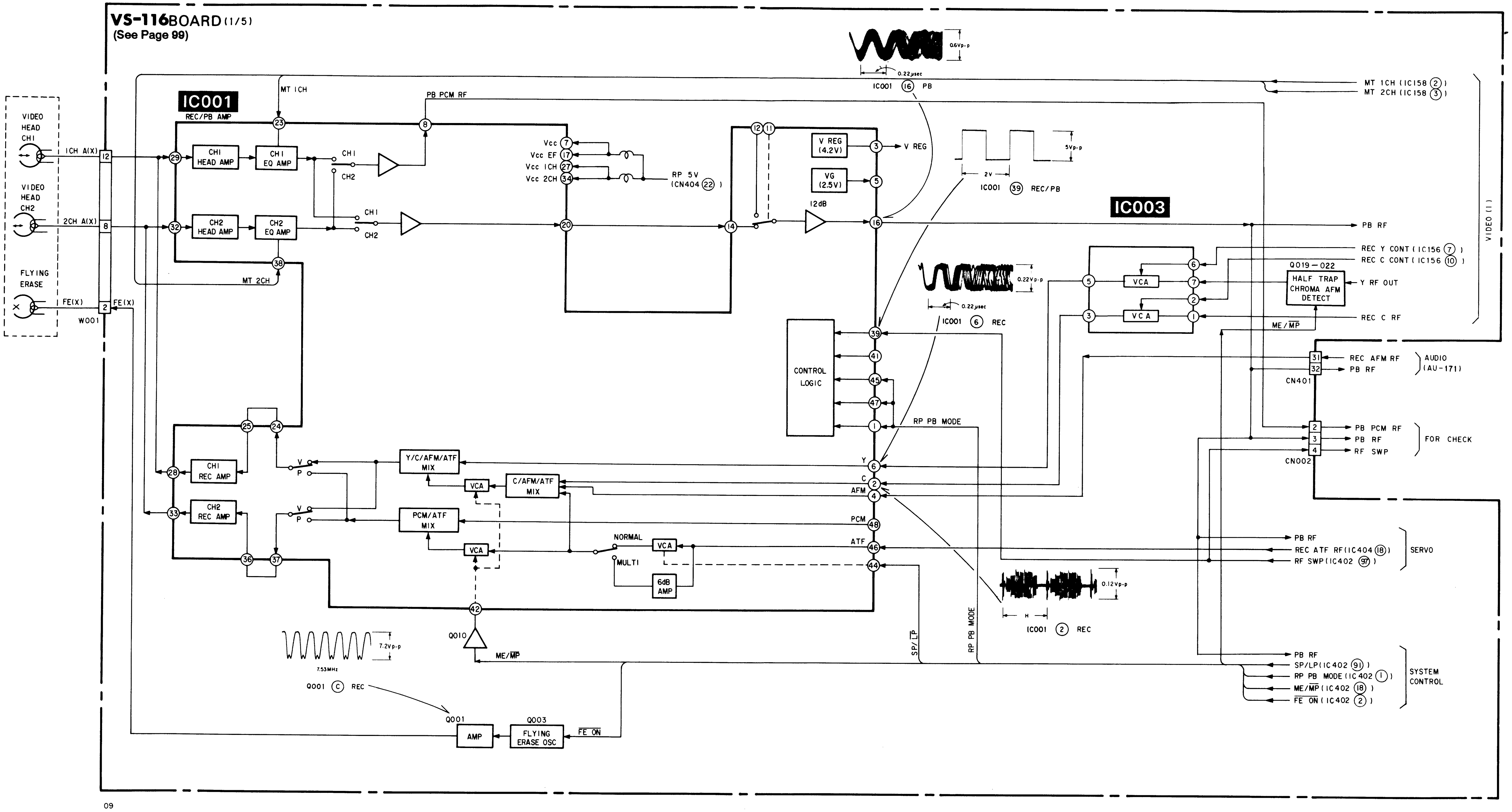

(See Page 93)
VC-147 BOARD (1/2)
(See Page 92)
LENS UNIT
CAMERA (1)
IRIS PWM (IC709 (73))
REF 2V (IC702 (12))
HALL OUT (IC709 (59))
HALL OFS (IC702 (8))
HALL GAIN (IC702 (7))
ZOOM FWD (IC709 (2))
ZOOM REV (IC709 (1))
ZOOM SPD (IC702 (9))
AV REF (IC709 (51))
ZOOM POS (IC709 (60))
ZOOM POS X4 (IC709 (58))
ZP PWM (IC709 (74))
FOC IN 4 (IC706 (15))
FOC IN 2 (IC706 (13))
FOC IN 3 (IC706 (14))
FOC IN 1 (IC706 (12))
FOC END FAR (IC709 (28))
FOC END LED (IC709 (6))
FOC END FAR 2 (IC709 (27))
LPF
IC852 (1/4)
IC851 (1/2)
IRIS DRIVE
IC851 (1/2)
HALL AMP
IC852 (1/4)
HALL BIAS CONTROL
IC852 (1/4)
HALL GAIN CONTROL
Q851
IC854
ZOOM MOTOR DRIVE
IN 1
IN 2
OUT 1
OUT 2
Vcc
V CONT
Vss
MT 5V (W402 (1) (2))
Q853
DRIVE CURRENT LIMITER
ATT
IC852 (1/4)
BUFFER
IC856
ZOOM POS X4
LPE
IC856 (1/2)
LPF
IC853
FOCUS MOTOR DRIVE
IN 1
IN 2
EN 1
EN 2
A
B
B̄
Ā
Vcc
MT 5V (W402 (1) (2))
Q852
LED DRIVE
CN851
DRIVE (+)
DRIVE (−)
CONT (+)
CONT (−)
BIAS (+)
HALL (+)
HALL (−)
BIAS (+)
ZOOM W
ZOOM T
ZP REF
ZOOM ENC
GND
FOCUS MA
FOCUS MB
FOCUS M̄B̄
FOCUS M̄Ā
SENS Vcc
EDGE SENS
LED
ZONE SENS
M904
IRIS METER
M
H
M906
ZOOM MOTOR
M
ZOOM POSITION
M905
FOCUS MOTOR
M
FOCUS END SENSOR

3-4. VIDEO (1) BLOCK DIAGRAM

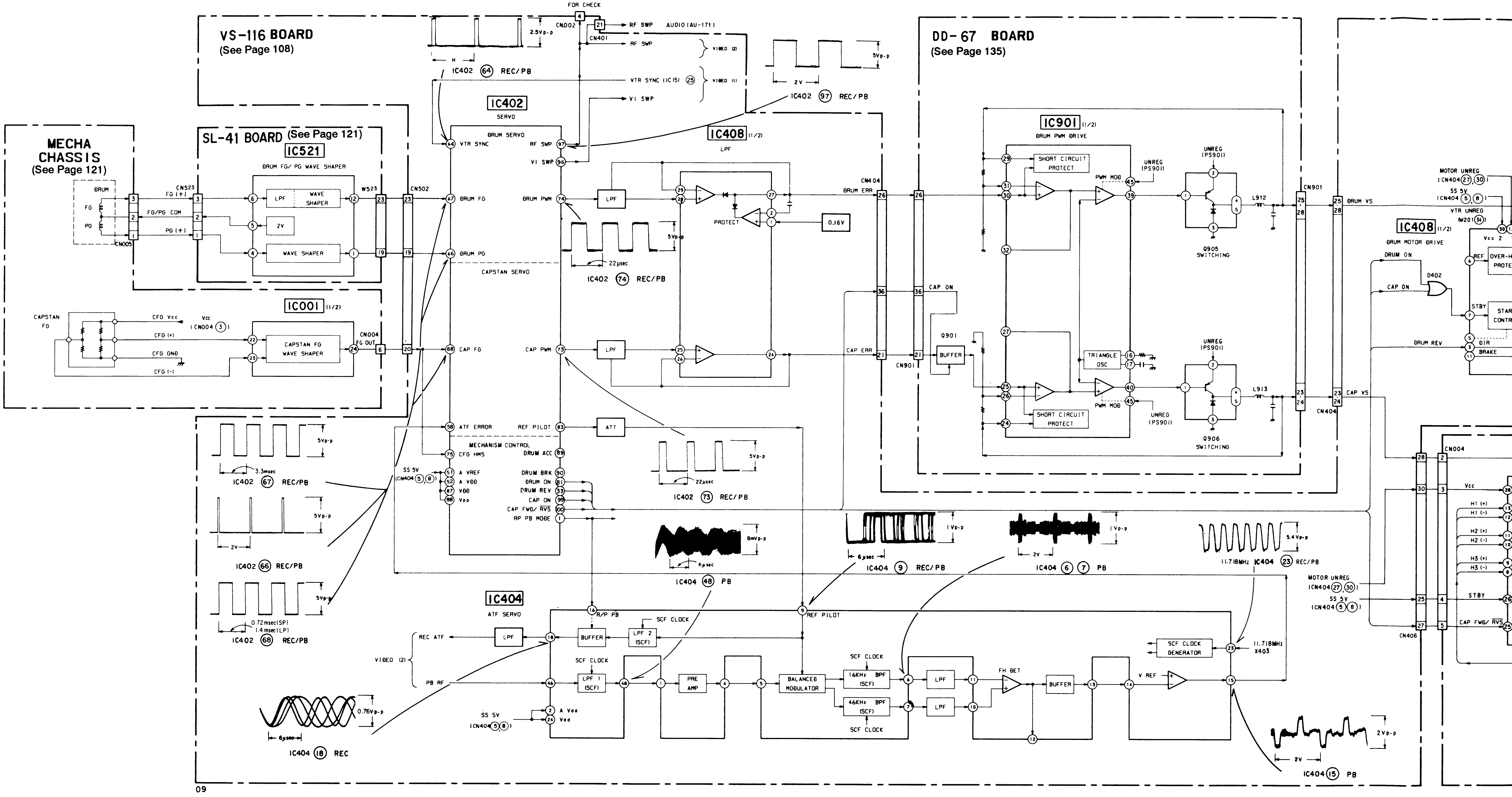

VS-116 BOARD
(See Page 103)
IC151
Y PROCESS
IC152
CHROMA PROCESS
IC155
IC159
VIDEO (2)
Y RF
PB RF
REC C RF
Q189 BUFFER
Q182 BUFFER
AFM/ATF TRAP
Q184 BUFFER
CHROMA TRAP
Q024, Q001 HIGH PASS SOFT LIMITER
Q025 CHARACTER SWITCH
Q026 BUFFER
Q030 CHARACTER SWITCH
LPF
fsc TRAP
Q205 DOC DET LEVEL SWITCH
Q191 PEAKING EQ.
Q192 DELAY EQ.
Q194 AMP
Q195 BUFFER
Q161 TEMPERATURE COMPENSATE
VCA
PB Y LEVEL ADJ
LIMITER
FM DEMOD
DOC DET
FM MODULATOR
Y/I CONV (HALF H SHIFT)
RF AGC
CLIP COMPEN
CARRIER SET ADJ
DEVIATION ADJ
Q207, 214 SP/LP SWITCH
REC SMEAR COMPEN
WHITE/DARK CLIP
MAIN-EMPHASIS
MAIN EMPHASIS TIME CONSTANT
SUB-EMPHASIS
HPF
HALF H SHIFT CANCEL
Y CORRE DET
Y AGC DET
CLAMP
TRAP 4.43MHz
Y AGC AMP
HARD CLIP
Q178 BUFFER
VD, HD ADD
OSD (CHARACTER MIX)
SYNC SEP
AGC DET
Q230 BUFFER
FL154 YD LPF
Q199
Q200
Q203 BUFFER
REC C BPF AFM TRAP
Q204 AMP
ACC AMP
ACC CONT
ACC CHANNEL HOLD
ACC DET
BURST DE-EMPHASIS
CHROMA DE-EMPHASIS
ACK SW
REC CONVERTER
BURST EMPHASIS
CHROMA EMPHASIS
I REF
PB COVERTER
FL152 4.43MHz BPF
CROSS TALK
CORR DET
CHROMA MUTE
ACK CONT
ACK DET
1/8
375fH VCO
AFC FILTER
AFC DET
1/375
HALF H KILLER BURST FLAG
PHASE SHIFT
CARRIER INVERT
BURST ID FF
BURST ID DET
SYNC DET
APC DET
APC FILTER
CARRIER CONVERTER
4.43MHz VXO
CHROMA EMPHASIS BPF FL153
5.17MHz BPF CF151
X151 4.43MHz
Q212 BUFFER
Q210 ACK DETECT
Q221
PHASE SHIFT
1/2 FH MP

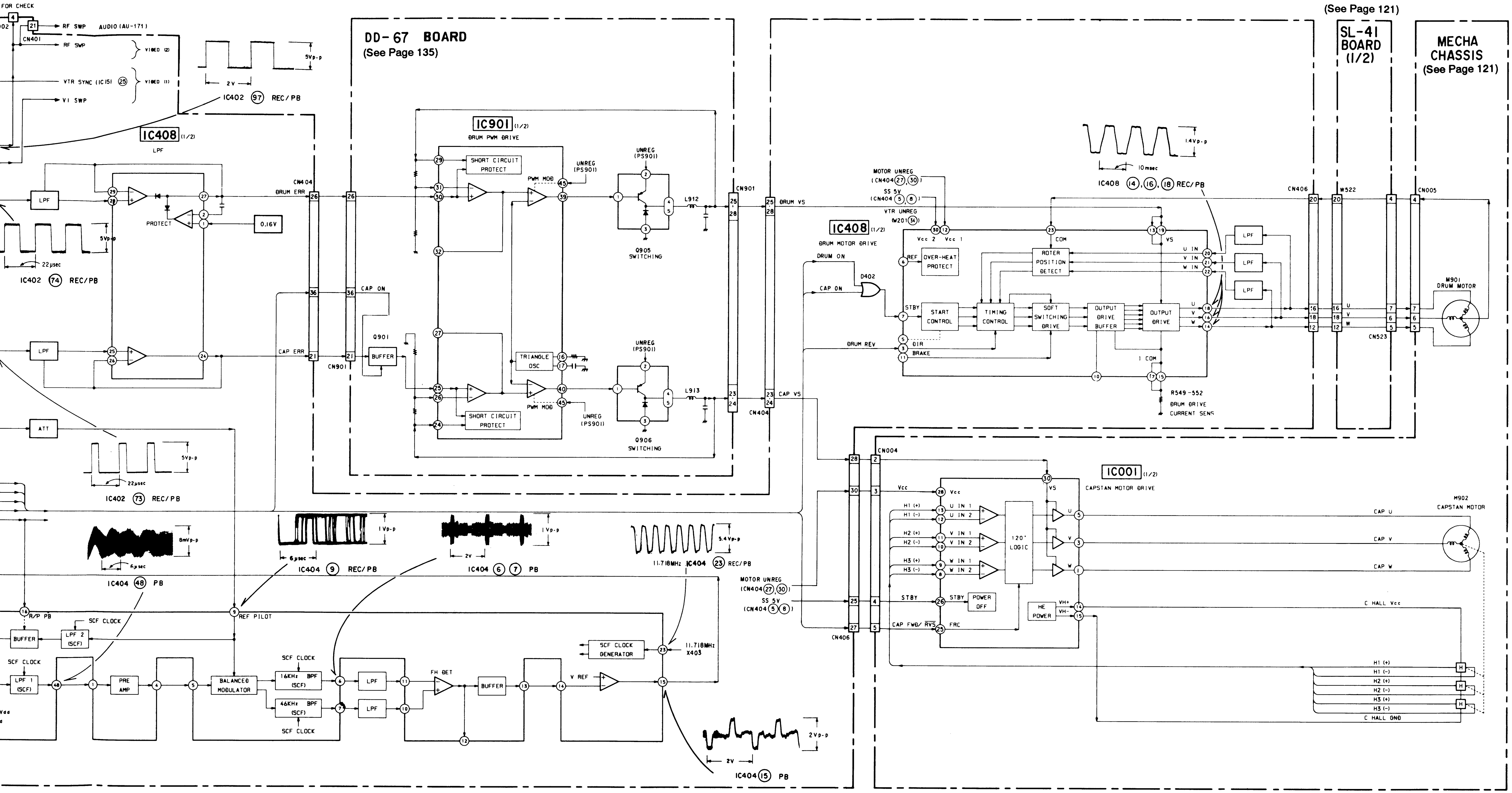

JK-99 BOARD (See Page 117)
J517 (1/2)
VIDEO OUT
RFU DC OUT
W517
CN102
EVF OUT
EVF (VF-42)
CN101
VIDEO OUT
RF DC OUT
Q151, 152 CURRENT LIMITER
AU 5V CN404
Q174-177 CHARACTER MIX & CHROMA TRAP
V405
CAM Y
CAM C
REC H
PB SYNC
FSC
CAMERA (1) (VC-147)
CN401
1.5 IR
AUDIO FADE
1.5 DEV
AUDIO (AU-171)
Q008 BUFFER
BUS DECODER
VIDEO CS
SCK
DATA TO SLVE
INPUT SELECT
CLAMP
VIDEO OUT AMP
V10 5V
V OUT SW (SYSCON IC402)
ACK DC (COLOR/BW)
Y/C MIX
NOISE CANSEL
ATT
LPF
LIMITER
HPF
BUFFER
Q208 ACK SWITCH
Q171, 125
CAMERA REC
PB/EE C
Q124
Q169, 170
CAM/LINE
V MUTE
SYSCON IC402
HARD CLIP
Y COMB FILTER
COMB FILTER
REC···Y/C SEP
PB···CROSSTALK CANCEL
4.43MHz TRAP
4.43MHz BPF
NO CORRE Y
EQ
Q154 BUFFER
Q158, 161 DELAY EQ
Q162, 168, 237 CHARACTER SWITCH
Q166 BUFFER
EMPHASIS Y LEVEL ADJ
VCA
IC155 (1/2)
EMPLB
SP/LP
EDIT
VA PB MODE
C ACC AMP
C ACC DET
DM
2H DELAY Y+C (REC)
2H DELAY C (PB)
IC154
2H DELAY (CCD)
CCD CLOCK
3FSC PLL
Q231 AMP
FL155 LPF DELAY 180nS
Q232 EQ
Q233 BUFFER
RV151 Y/C SEP
PB 5V (Q199)
IC159 (1/2)
IR ADJ
V REF (3.5V)
V REG (IC151)
SR IR
TRAP, BPF, EQ CHARACTER
Q230 BUFFER
FL154 Y0 LPF
Q229 AMP
1H DELAY Y
CAM REC+WCCO PB
CAM REC - CORRE OFF
005 (CHARACTER MIX)
SYNC SEP
AGC DET
AGC OFF
AGC AMP
SR VDW
SR VDB + V MUTE
VTR SYNC
IC151 (25) REC/PB
IC151 (38) PB
IC151 (38) REC
IC151 (13) REC
IC151 (13) PB
IC151 (9) REC
IC151 (9) PB
IC151 (5) REC/PB
IC151 (7) REC/PB
IC154 (1) PB
Q159 JOG V0 + AFC H
PAL JOG HD
Q236
Q183
Q180
Q160
SR VDB+V MUTE
DS VDW
DS VDB
DS ON
JOG V0
JOG
VA PB MODE
CAM/LINE
V MUTE
SYSCON
IC156 EVR (D/A CONVERTER)
EE LVL
SR IR
COMB
EMPLB
CARR
DEV
REC Y
REC C
REC Y CONT
REC C CONT
DATA TO SLAVE (CN403)
SCK (CN403)
VIDEO D/A CS (CN403)
V OUT SW (IC402)
SYNC DET (IC402)
ATF CONT
IC158 EVR (D/A CONVERTER)
VIDEO (2)
MT 1CH
MT 2CH
PB Y
MT ·CH
1.5 IR
1.5 DEV
AUDIO FADER
SERVO
VTR SYNC
V1 SWP (IC402)
V1 SWP
REC C (CAM)
PB/EE C
IC121 JOG CHROMA PROCESS
Q212 BUFFER
JOG C
ACK+V MUTE
VA PB 5V (Q199)
FSC (IC152)
PHASE SHIFT
Q221
SYNC DET
JOG.DOP.ON
Q219, 220, 160
PAL JOG HD
AMP
TH/DL
SEQUENCE DET
FREQUENCY CONVERTER
TH CHROMA
DH CHROMA
SWD 1 1/2 FH
-90° SHIFT
X2
PHASE SHIFT
LPF
APC DET
QUAIS BURST
1/2 FH MP
1/2
FH VCO
AFC ID
MASK
BF GENERATOR
HALF H KILLER
MODE
BFXCH
Q121 JOG SWITCH
Q121 MODE SWITCH
FL121 4.43MHz BPF
Q126 AMP
PAL SEC SWITCH
Q222, 223
BF (IC152)
JOG (IC402)
JOG (SYSCON IC402)
Q123 ON/OFF SWITCH
VTR SYNC (IC151)
DOP (IC151)

3-5. VIDEO (2) BLOCK DIAGRAM


VS-116BOARD (1/5)
(See Page 99)
IC001
REC/PB AMP
VIDEO HEAD CH1
VIDEO HEAD CH2
FLYING ERASE
1CH A(X)
2CH A(X)
FE(X)
W001
CH1 HEAD AMP
CH1 EQ AMP
CH2 HEAD AMP
CH2 EQ AMP
MT 1CH
MT 2CH
PB PCM RF
CH1
CH2
Vcc 7
Vcc EF 17
Vcc 1CH 27
Vcc 2CH 34
RP 5V (CN404 22)
V REG (4.2V)
VG (2.5V)
V REG
12dB
0.6Vp-p
0.22μsec
IC001 16 PB
5Vp-p
2V
IC001 39 REC/PB
IC003
0.22Vp-p
0.22μsec
IC001 6 REC
CONTROL LOGIC
RP PB MODE
CH1 REC AMP
CH2 REC AMP
Y/C/AFM/ATF MIX
C/AFM/ATF MIX
PCM/ATF MIX
VCA
NORMAL
MULTI
6dB AMP
Y
C
AFM
PCM
ATF
0.12Vp-p
H
IC001 2 REC
7.2Vp-p
7.53MHz
Q001 C REC
Q010
ME/MP
Q001
AMP
Q003
FLYING ERASE OSC
FE ON
SP/LP
RP PB MODE
MT 1CH (IC158 2)
MT 2CH (IC158 3)
VIDEO (1)
PB RF
REC Y CONT (IC156 7)
REC C CONT (IC156 10)
Q019 – 022
HALF TRAP CHROMA AFM DETECT
Y RF OUT
REC C RF
ME/MP
REC AFM RF
PB RF
AUDIO (AU-171)
CN401
PB PCM RF
PB RF
RF SWP
FOR CHECK
CN002
PB RF
REC ATF RF (IC404 18)
RF SWP (IC402 97)
SERVO
PB RF
SP/LP (IC402 91)
RP PB MODE (IC402 1)
ME/MP (IC402 18)
FE ON (IC402 2)
SYSTEM CONTROL
09

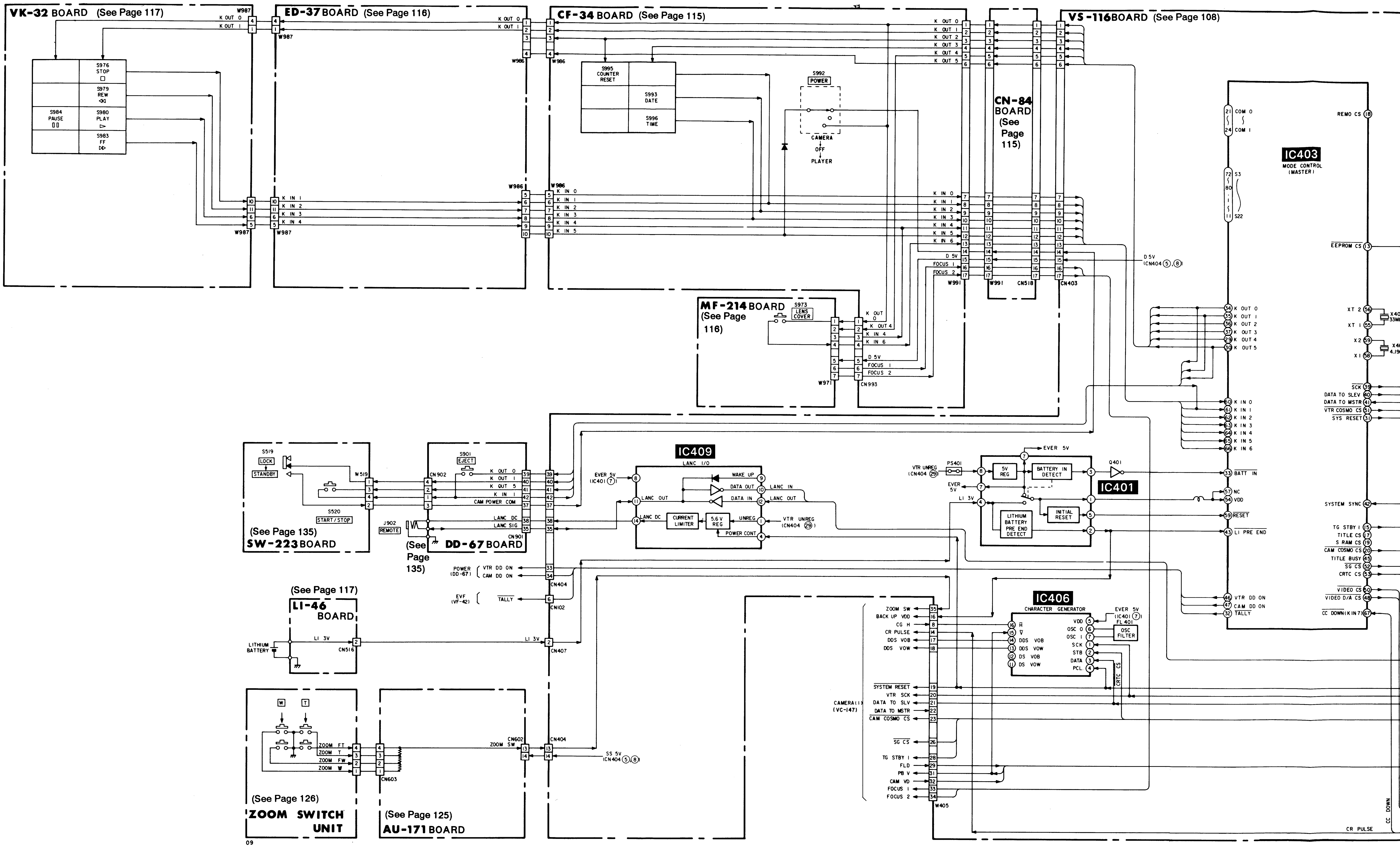
3-6. SERVO BLOCK DIAGRAM

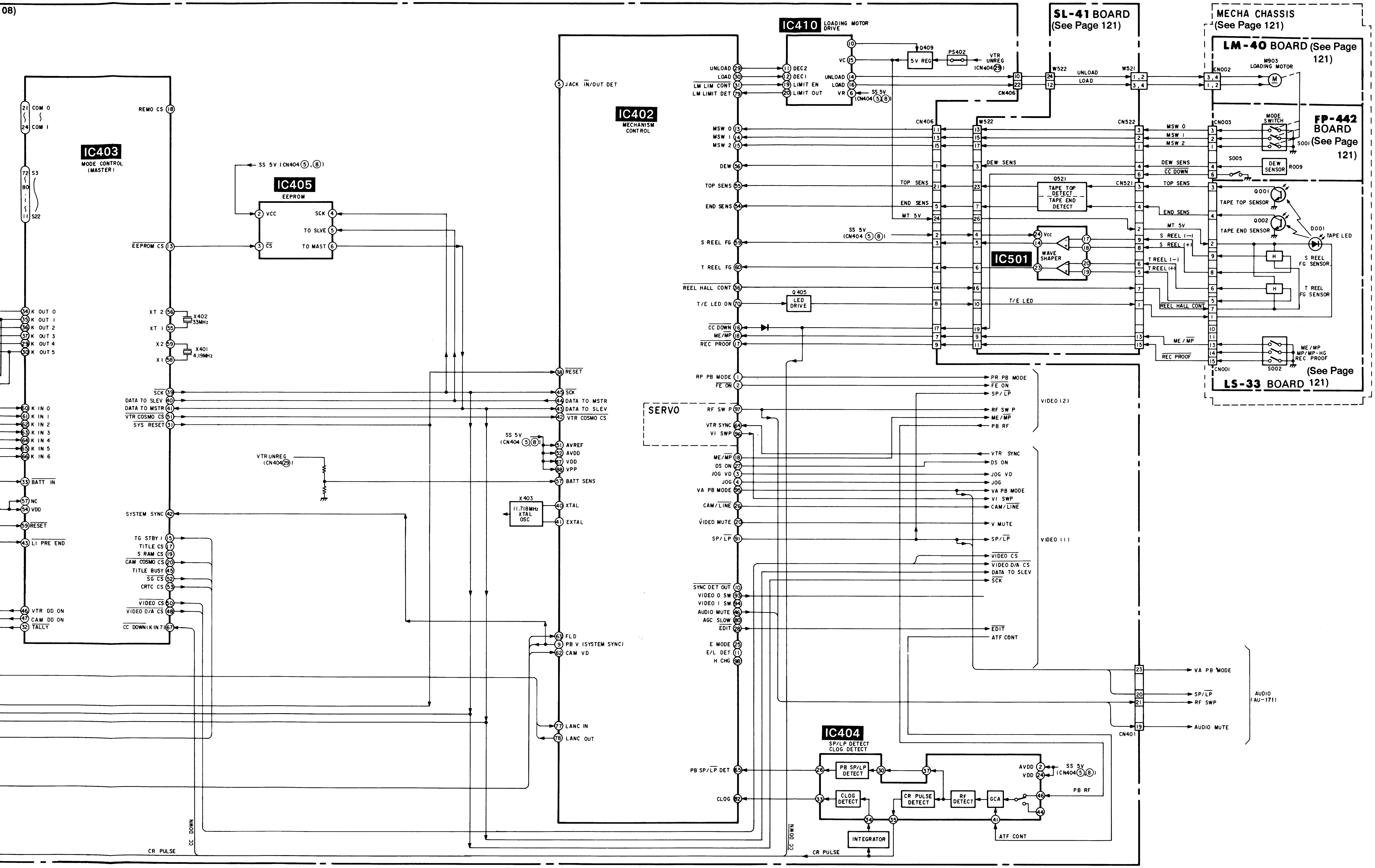

VS-116 BOARD
(See Page 108)
MECHA CHASSIS
(See Page 121)
SL-41 BOARD (See Page 121)
IC521
DRUM FG/ PG WAVE SHAPER
DRUM
FG
PG
CN005
CN523
FG (+)
FG/PG COM
PG (+)
LPF
WAVE SHAPER
2V
WAVE SHAPER
W523
CN502
IC001 (1/2)
CAPSTAN FG
CFG Vcc
Vcc (CN004 ③)
CFG (+)
CFG GND
CFG (-)
CAPSTAN FG WAVE SHAPER
CN004
FG OUT
FOR CHECK
CN002
CN401
RF SWP
AUDIO (AU-171)
RF SWP
VIDEO (2)
VTR SYNC (IC151 ㉕)
VIDEO (1)
V1 SWP
2.5Vp-p
H
IC402 ⑭ REC/PB
IC402
SERVO
DRUM SERVO
VTR SYNC
RF SWP
V1 SWP
DRUM FG
DRUM PWM
DRUM PG
CAPSTAN SERVO
CAP FG
CAP PWM
ATF ERROR
REF PILOT
MECHANISM CONTROL
CFG HMS
DRUM ACC
SS 5V (CN404 ⑤ ⑧)
A VREF
A VDD
VDD
Vpp
DRUM BRK
DRUM ON
DRUM REV
CAP ON
CAP FWD/ RVS
RP PB MODE
5Vp-p
2V
IC402 (97) REC/PB
IC408 (1/2)
LPF
LPF
PROTECT
0.16V
LPF
5Vp-p
22μsec
IC402 (74) REC/PB
ATT
22μsec
IC402 (73) REC/PB
CN404
DRUM ERR
CAP ON
CAP ERR
CN901
DD-67 BOARD
(See Page 135)
IC901 (1/2)
DRUM PWM DRIVE
SHORT CIRCUIT PROTECT
PWM MOD
UNREG (PS901)
Q905 SWITCHING
L912
0901
BUFFER
TRIANGLE OSC
PWM MOD
SHORT CIRCUIT PROTECT
UNREG (PS901)
Q906 SWITCHING
L913
DRUM VS
CAP VS
CN404
MOTOR UNREG (CN404 ㉗ ㉚)
SS 5V (CN404 ⑤ ⑧)
VTR UNREG (W201 ㉞)
IC408 (1/2)
DRUM MOTOR DRIVE
DRUM ON
CAP ON
D402
DRUM REV
REF
OVER-H PROTE
STBY
STAR CONTR
DIR
BRAKE
Vcc 2
3.3msec
IC402 (67) REC/PB
5Vp-p
2V
IC402 (66) REC/PB
5Vp-p
0.72msec(SP)
1.4msec(LP)
IC402 (68) REC/PB
8mVp-p
6μsec
IC404 (48) PB
1Vp-p
6μsec
IC404 ⑨ REC/PB
1Vp-p
2V
IC404 ⑥ ⑦ PB
5.4Vp-p
11.718MHz IC404 ㉓ REC/PB
MOTOR UNREG (CN404 ㉗ ㉚)
SS 5V (CN404 ⑤ ⑧)
CN004
CN406
Vcc
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
STBY
CAP FWD/ RVS
IC404
ATF SERVO
R/P PB
REF PILOT
SCF CLOCK
REC ATF
LPF
BUFFER
LPF 2 (SCF)
VIDEO (2)
PB RF
SCF CLOCK
LPF 1 (SCF)
PRE AMP
BALANCED MODULATOR
SCF CLOCK
16KHz BPF (SCF)
46KHz BPF (SCF)
SCF CLOCK
LPF
LPF
FH DET
BUFFER
V REF
SCF CLOCK GENERATOR
11.718MHz X403
SS 5V (CN404 ⑤ ⑧)
A Vdd
Vdd
0.76Vp-p
6μsec
IC404 ⑱ REC
2Vp-p
2V
IC404 ⑮ PB
09



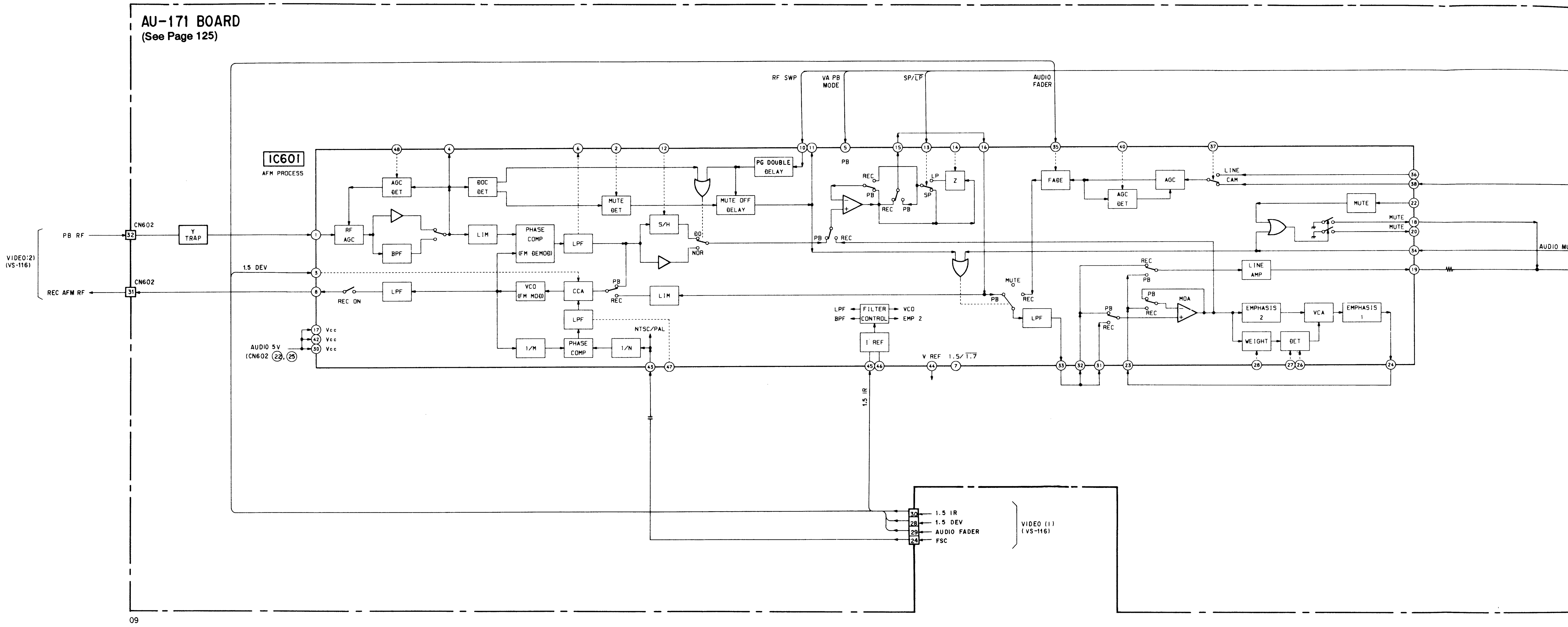
FOR CHECK
RF SWP
AUDIO (AU-171)
CN401
VIDEO (2)
VTR SYNC (IC151 25)
VIDEO (1)
V1 SWP
5Vp-p
2V
IC402 97 REC/PB
IC408 (1/2)
LPF
PROTECT
0.16V
CN404
DRUM ERR
22μsec
IC402 74 REC/PB
CAP ERR
CAP ON
CN901
ATT
IC402 73 REC/PB
8mVp-p
6μsec
IC404 48 PB
1Vp-p
6μsec
IC404 9 REC/PB
IC404 6 7 PB
5.4Vp-p
11.718MHz IC404 23 REC/PB
R/P PB
SCF CLOCK
LPF 2 (SCF)
BUFFER
LPF 1 (SCF)
PRE AMP
REF PILOT
BALANCED MODULATOR
16KHz BPF (SCF)
46KHz BPF (SCF)
LPF
FH DET
BUFFER
V REF
SCF CLOCK GENERATOR
11.718MHz X403
2Vp-p
IC404 15 PB
DD-67 BOARD
(See Page 135)
IC901 (1/2)
DRUM PWM DRIVE
SHORT CIRCUIT PROTECT
PWM MOD
UNREG (PS901)
Q905 SWITCHING
Q906 SWITCHING
L912
L913
Q901
TRIANGLE OSC
DRUM VS
CAP VS
MOTOR UNREG (CN404 27, 30)
SS 5V (CN404 5, 8)
VTR UNREG (W201 34)
IC408 (1/2)
DRUM MOTOR DRIVE
DRUM ON
D402
DRUM REV
Vcc 2
Vcc 1
REF
OVER-HEAT PROTECT
COM
ROTER POSITION DETECT
U IN
V IN
W IN
VS
STBY
START CONTROL
TIMING CONTROL
SOFT SWITCHING DRIVE
OUTPUT DRIVE BUFFER
OUTPUT DRIVE
DIR
BRAKE
I COM
R549-552 DRUM DRIVE CURRENT SENS
1.4Vp-p
10msec
IC408 14, 16, 18 REC/PB
CN406
(See Page 121)
SL-41 BOARD (1/2)
W522
CN523
MECHA CHASSIS
(See Page 121)
CN005
M901 DRUM MOTOR
U
V
W
CN004
IC001 (1/2)
CAPSTAN MOTOR DRIVE
Vcc
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
U IN 1
U IN 2
V IN 1
V IN 2
W IN 1
W IN 2
120° LOGIC
STBY
POWER OFF
CAP FWD/RVS
FRC
HE POWER
VH+
VH-
CAP U
CAP V
CAP W
M902 CAPSTAN MOTOR
C HALL Vcc
C HALL GND
CN406

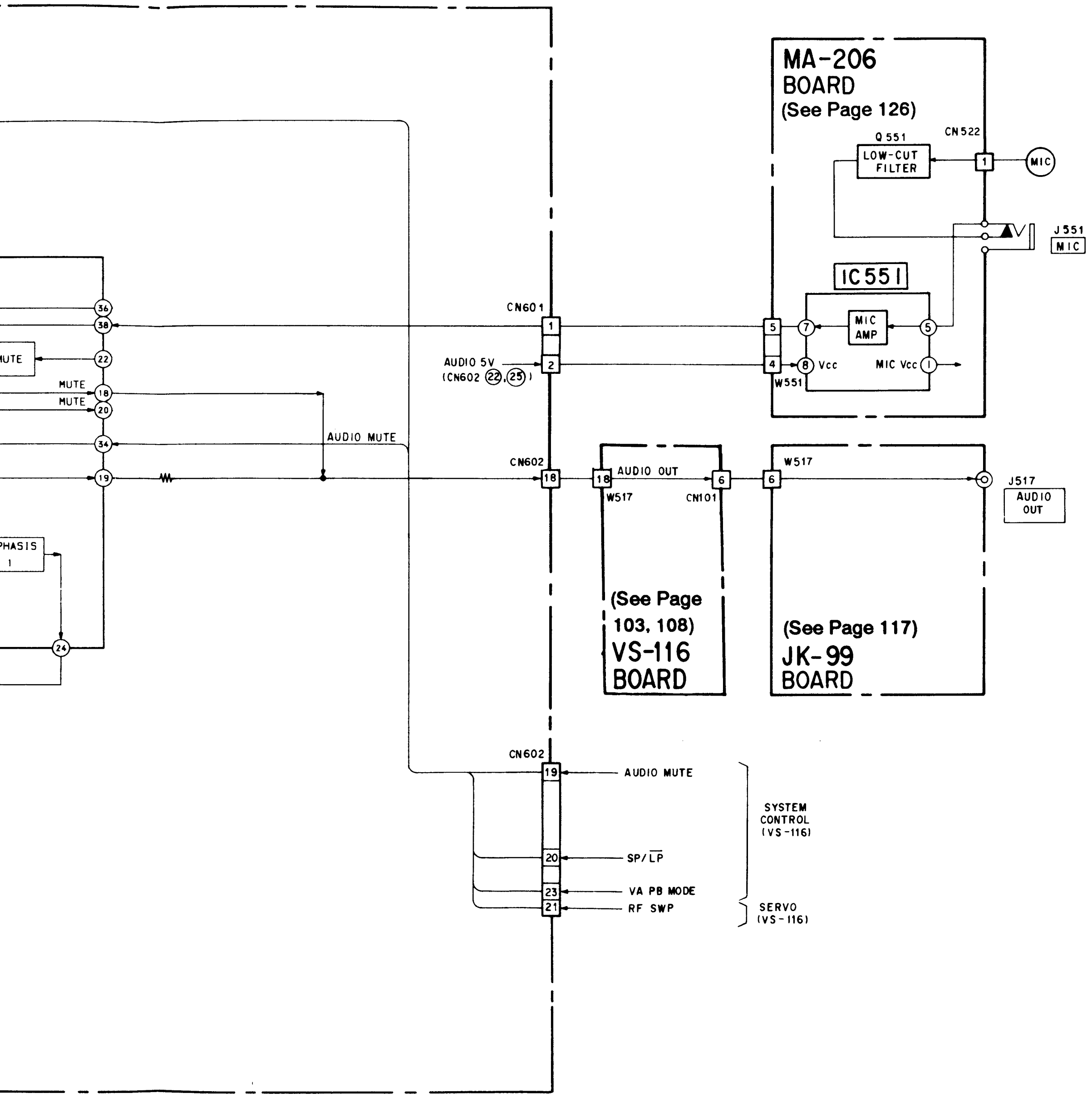
3-7. SYSTEM CONTROL BLOCK DIAGRAM


VK-32 BOARD (See Page 117)
ED-37 BOARD (See Page 116)
CF-34 BOARD (See Page 115)
CN-84 BOARD (See Page 115)
VS-116 BOARD (See Page 108)
MF-214 BOARD (See Page 116)
SW-223 BOARD (See Page 135)
DD-67 BOARD (See Page 135)
LI-46 BOARD (See Page 117)
ZOOM SWITCH UNIT (See Page 126)
AU-171 BOARD (See Page 125)
W987
W986
W991
CN518
CN403
W971
CN993
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
D 5V
FOCUS 1
FOCUS 2
S976 STOP
S979 REW
S980 PLAY
S983 FF
S984 PAUSE
S995 COUNTER RESET
S993 DATE
S996 TIME
S992 POWER
CAMERA
OFF
PLAYER
S973 LENS COVER
D 5V (CN404 ⑤,⑧)
IC403
MODE CONTROL (MASTER)
COM 0
COM 1
S3
S22
REMO CS
EEPROM CS
XT 2
XT 1
X 2
X 1
SCK
DATA TO SLEV
DATA TO MSTR
VTR COSMO CS
SYS RESET
BATT IN
NC
VDD
RESET
LI PRE END
SYSTEM SYNC
TG STBY I
TITLE CS
S RAM CS
CAM COSMO CS
TITLE BUSY
SG CS
CRTC CS
VIDEO CS
VIDEO D/A CS
CC DOWN(KIN7)
VTR DD ON
CAM DD ON
TALLY
IC409
LANC I/O
EVER 5V (IC401 ⑦)
WAKE UP
DATA OUT
DATA IN
LANC IN
LANC OUT
LANC DC
CURRENT LIMITER
5.6V REG
UNREG
POWER CONT
VTR UNREG (CN404 ㉙)
IC401
PS401
5V REG
BATTERY IN DETECT
LITHIUM BATTERY PRE END DETECT
INITIAL RESET
EVER 5V
LI 3V
Q401
S519 LOCK STANDBY
S520 START/STOP
W519
CN902
S901 EJECT
CAM POWER COM
LANC DC
LANC SIG
CN901
J902 REMOTE
CN404
POWER (DD-67) VTR DD ON CAM DD ON
EVF (VF-42) TALLY
CN102
LITHIUM BATTERY
CN516
CN407
IC406
CHARACTER GENERATOR
VDD
OSC 0
OSC I
SCK
STB
DATA
PCL
DDS VOB
DDS VOW
DS VOB
DS VOW
EVER 5V (IC401 ⑦)
FL401
OSC FILTER
CRTC CS
ZOOM SW
BACK UP VDD
CG H
CR PULSE
SYSTEM RESET
VTR SCK
DATA TO SLV
DATA TO MSTR
CAM COSMO CS
SG CS
TG STBY I
FLD
PB V
CAM VD
CAMERA(1) (VC-147)
W405
ZOOM FT
ZOOM T
ZOOM FW
ZOOM W
CN603
CN602
SS 5V (CN404 ⑤,⑧)
CC DOWN
CR PULSE
09

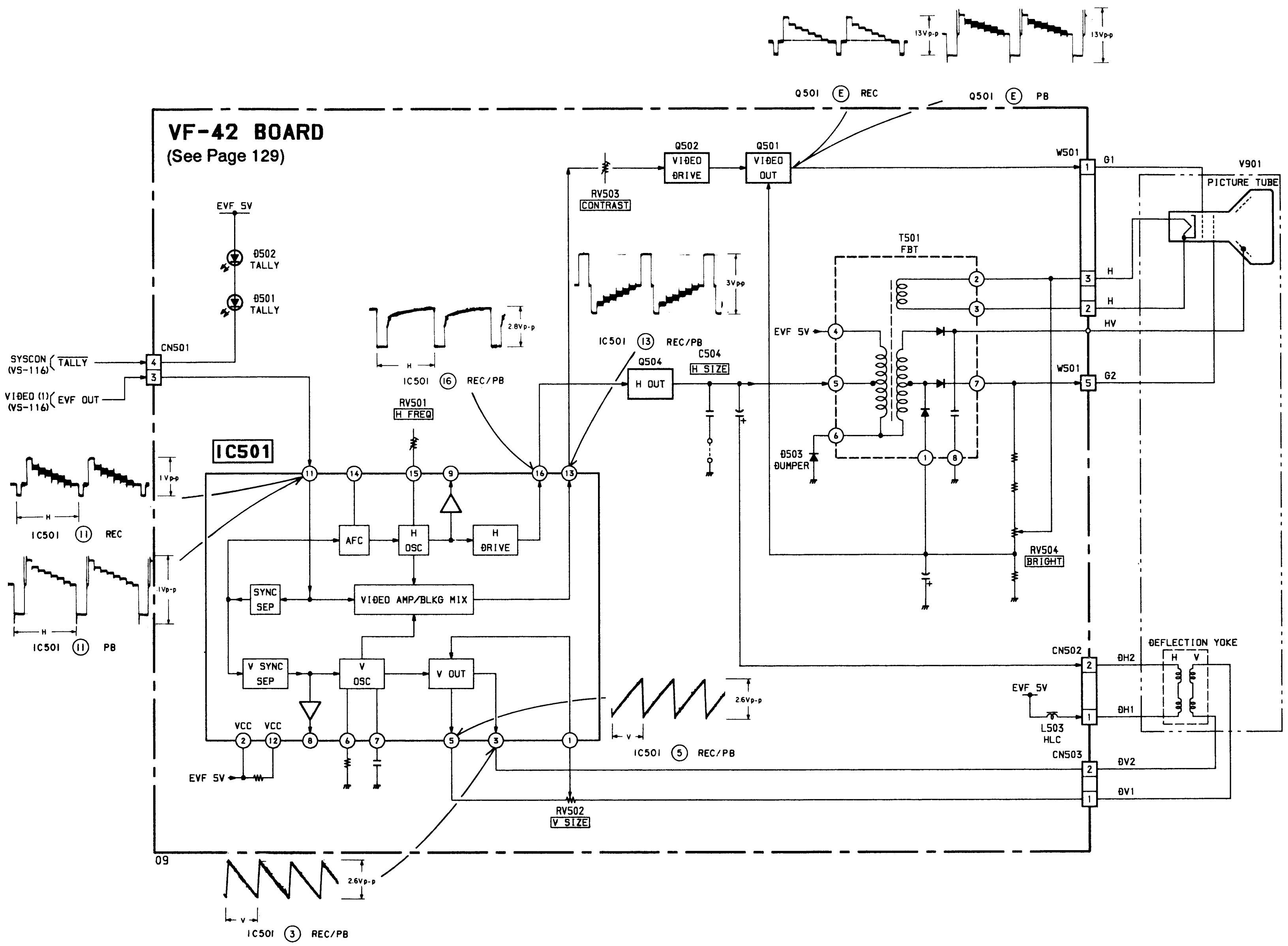

08)
IC403
MODE CONTROL (MASTER)
COM 0
COM 1
S3
S22
REMO CS
EEPROM CS
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
XT 2
XT 1
X2
X1
X402 33MHz
X401 4.19MHz
SCK
DATA TO SLEV
DATA TO MSTR
VTR COSMO CS
SYS RESET
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
BATT IN
NC
VDD
RESET
LI PRE END
SYSTEM SYNC
TG STBY I
TITLE CS
S RAM CS
CAM COSMO CS
TITLE BUSY
SG CS
CRTC CS
VIDEO CS
VIDEO D/A CS
CC DOWN(KIN7)
VTR DD ON
CAM DD ON
TALLY
CR PULSE
CC DOWN
IC405
EEPROM
SS 5V (CN404 ⑤,⑧)
VCC
CS
SCK
TO SLVE
TO MAST
VTR UNREG (CN404㉙)
X403 11.718MHz XTAL OSC
IC402
MECHANISM CONTROL
JACK IN/OUT DET
RESET
SCK
DATA TO MSTR
DATA TO SLEV
VTR COSMO CS
AVREF
AVDD
VDD
VPP
BATT SENS
XTAL
EXTAL
FLD
PB V (SYSTEM SYNC)
CAM VD
LANC IN
LANC OUT
IC410
LOADING MOTOR DRIVE
UNLOAD
LOAD
LM LIM CONT
LM LIMIT DET
DEC2
DEC1
LIMIT EN
LIMIT OUT
VC
VR
Q409
5V REG
PS402
VTR UNREG (CN404㉙)
MSW 0
MSW 1
MSW 2
DEW
TOP SENS
END SENS
MT 5V
S REEL FG
T REEL FG
REEL HALL CONT
T/E LED ON
Q405 LED DRIVE
CC DOWN
ME/MP
REC PROOF
RP PB MODE
FE ON
SERVO
RF SW P
VTR SYNC
VI SWP
DS ON
JOG VD
JOG
VA PB MODE
CAM/LINE
VIDEO MUTE
SP/LP
SYNC DET OUT
VIDEO 0 SW
VIDEO 1 SW
AUDIO MUTE
AGC SLOW
EDIT
E MODE
E/L DET
H CHG
PB SP/LP DET
CLOG
PR PB MODE
VIDEO (2)
V MUTE
VIDEO CS
VIDEO D/A CS
DATA TO SLEV
VIDEO (1)
ATF CONT
IC404
SP/LP DETECT CLOG DETECT
PB SP/LP DETECT
CLOG DETECT
CR PULSE DETECT
RF DETECT
GCA
INTEGRATOR
AVDD
VDD
PB RF
CN406
W522
CN522
CN521
DEW SENS
Q521
TAPE TOP DETECT
TAPE END DETECT
IC501
WAVE SHAPER
Vcc
T/E LED
S REEL (−)
S REEL (+)
T REEL (−)
T REEL (+)
CC DOWN
CN401
VA PB MODE
RF SWP
AUDIO MUTE
AUDIO (AU-171)
SL-41 BOARD (See Page 121)
W522
W521
MECHA CHASSIS (See Page 121)
LM-40 BOARD (See Page 121)
CN002
M903 LOADING MOTOR
FP-442 BOARD (See Page 121)
CN003
MODE SWITCH
S001
S005
DEW SENSOR
R009
Q001
TAPE TOP SENSOR
Q002
TAPE END SENSOR
D001
TAPE LED
S REEL FG SENSOR
T REEL FG SENSOR
ME/MP
MP/MP-HG
REC PROOF
CN001
S002
LS-33 BOARD (See Page 121)

3-8. AUDIO BLOCK DIAGRAM

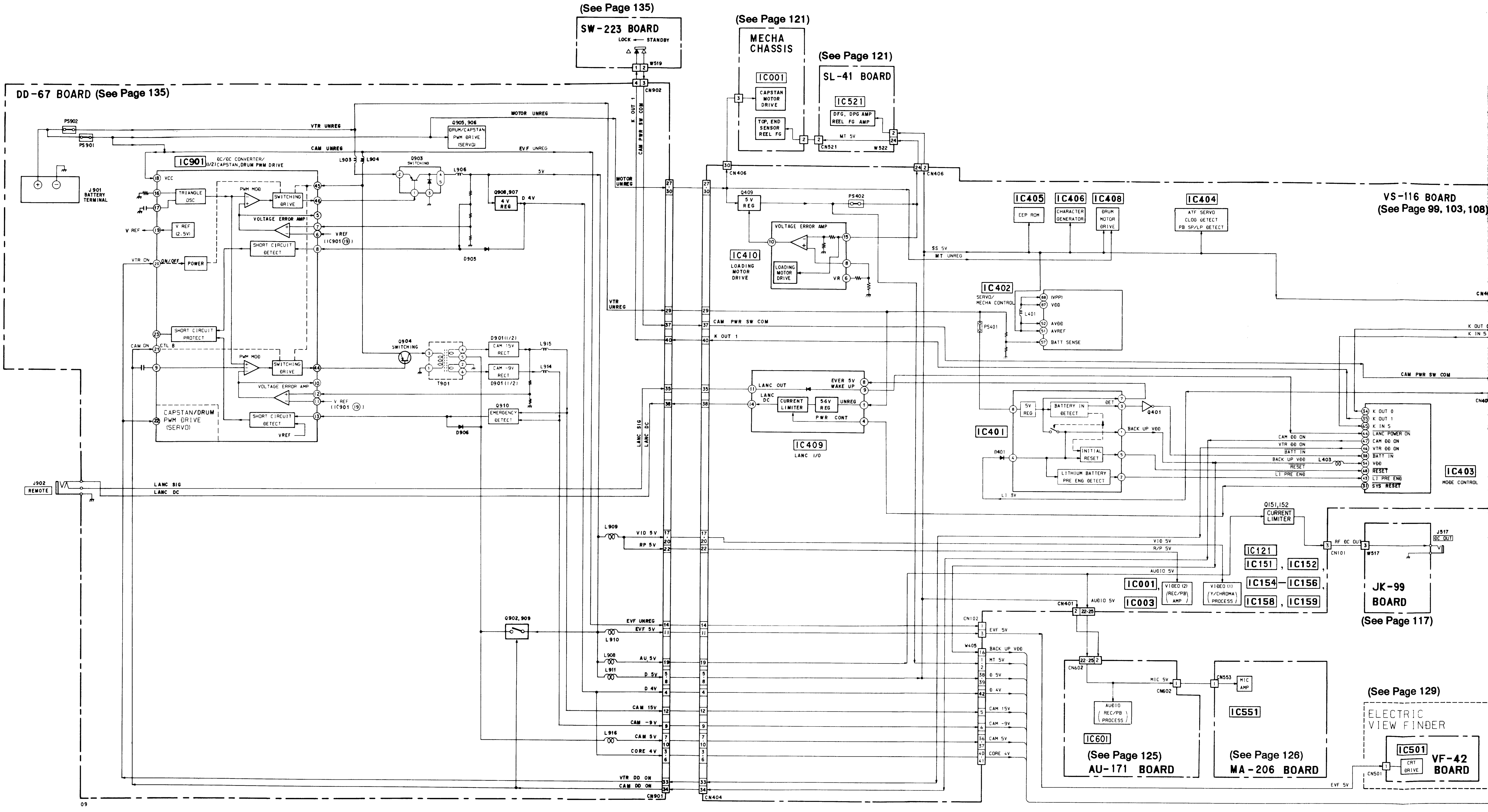

AU-171 BOARD
(See Page 125)
IC601
AFM PROCESS
VIDEO(2) (VS-116)
PB RF
REC AFM RF
CN602
Y TRAP
1.5 DEV
AUDIO 5V (CN602 22, 25)
Vcc
RF AGC
BPF
AGC DET
DOC DET
LIM
PHASE COMP (FM DEMOD)
LPF
VCO (FM MOD)
CCA
PHASE COMP
1/M
1/N
REC ON
MUTE DET
S/H
DO
NOR
NTSC/PAL
PG DOUBLE DELAY
MUTE OFF DELAY
RF SWP
VA PB MODE
SP/LP
AUDIO FADER
PB
REC
LP
SP
Z
FILTER CONTROL
VCO
EMP 2
I REF
1.5 IR
V REF
1.5/1.7
FADE
AGC DET
AGC
LINE
CAM
MUTE
LINE AMP
MOA
EMPHASIS 2
VCA
EMPHASIS 1
WEIGHT
DET
AUDIO MU
1.5 IR
1.5 DEV
AUDIO FADER
FSC
VIDEO (1) (VS-116)
09

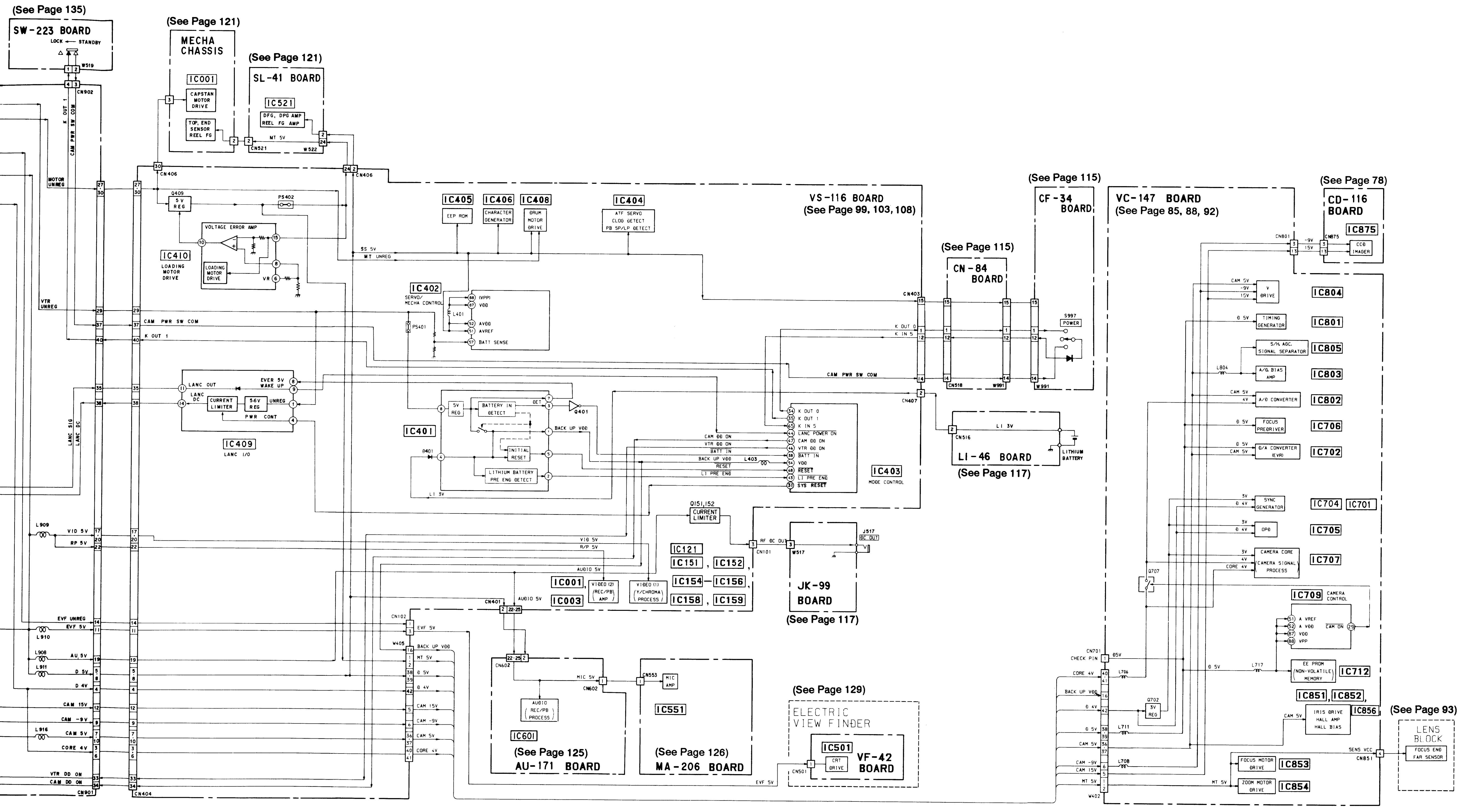

MA-206
BOARD
(See Page 126)
Q551
LOW-CUT FILTER
CN522
MIC
J551
MIC
IC551
MIC AMP
Vcc
MIC Vcc
W551
CN601
AUDIO 5V
(CN602 ㉒,㉕)
MUTE
AUDIO MUTE
CN602
AUDIO OUT
W517
CN101
J517
AUDIO OUT
PHASIS
(See Page 103, 108)
VS-116
BOARD
(See Page 117)
JK-99
BOARD
AUDIO MUTE
SP/LP
VA PB MODE
RF SWP
SYSTEM CONTROL (VS-116)
SERVO (VS-116)

3-9. EVF BLOCK DIAGRAM


Q501 Ⓔ REC
Q501 Ⓔ PB
13Vp-p
13Vpp
VF-42 BOARD
(See Page 129)
Q502
VIDEO DRIVE
Q501
VIDEO OUT
RV503
CONTRAST
W501
V901
PICTURE TUBE
EVF 5V
D502 TALLY
D501 TALLY
T501
FBT
3Vpp
2.8Vp-p
IC501 ⑬ REC/PB
Q504
C504
H SIZE
H OUT
IC501 ⑯ REC/PB
RV501
H FREQ
SYSCON (VS-116) TALLY
VIDEO (1) (VS-116) EVF OUT
CN501
IC501
1Vpp
IC501 ⑪ REC
IC501 ⑪ PB
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
VCC
EVF 5V
D503
DUMPER
RV504
BRIGHT
G1
H
HV
G2
CN502
DEFLECTION YOKE
DH2
DH1
L503
HLC
CN503
DV2
DV1
2.6Vp-p
IC501 ⑤ REC/PB
RV502
V SIZE
IC501 ③ REC/PB

3-10. POWER BLOCK DIAGRAM


(See Page 135)
SW-223 BOARD
LOCK
STANDBY
W519
DD-67 BOARD (See Page 135)
CN902
PS902
PS901
J901 BATTERY TERMINAL
VTR UNREG
CAM UNREG
MOTOR UNREG
EVF UNREG
IC901 DC/DC CONVERTER/(1/2) CAPSTAN, DRUM PWM DRIVE
Q905, 906 DRUM/CAPSTAN PWM DRIVE (SERVO)
L903
L904
Q903 SWITCHING
L906
5V
Q908, 907 4V REG
D 4V
VCC
TRIANGLE OSC
PWM MOD
SWITCHING DRIVE
VOLTAGE ERROR AMP
V REF (2.5V)
V REF
VREF (IC901 ⑲)
SHORT CIRCUIT DETECT
D905
VTR ON
ON/OFF
POWER
SHORT CIRCUIT PROTECT
CAM ON
CTL B
Q904 SWITCHING
T901
D901 (1/2) CAM 15V RECT
CAM -9V RECT
D901 (1/2)
L915
L914
Q910 EMERGENCY DETECT
D906
CAPSTAN/DRUM PWM DRIVE (SERVO)
V REF (IC901 ⑲)
VREF
J902 REMOTE
LANC SIG
LANC DC
L909
VID 5V
RP 5V
Q902, 909
EVF UNREG
EVF 5V
L910
L908
AU 5V
L911
D 5V
D 4V
CAM 15V
CAM -9V
L916
CAM 5V
CORE 4V
VTR DD ON
CAM DD ON
CN901
CN404
09
MOTOR UNREG
VTR UNREG
K OUT 1
CAM PWR SW COM
(See Page 121)
MECHA CHASSIS
IC001
CAPSTAN MOTOR DRIVE
TOP, END SENSOR REEL FG
(See Page 121)
SL-41 BOARD
IC521
DFG, DPG AMP REEL FG AMP
MT 5V
CN521
W522
CN406
Q409 5V REG
PS402
VOLTAGE ERROR AMP
IC410 LOADING MOTOR DRIVE
LOADING MOTOR DRIVE
VR
SS 5V
MT UNREG
IC405 EEP ROM
IC406 CHARACTER GENERATOR
IC408 DRUM MOTOR DRIVE
IC404 ATF SERVO CLOG DETECT PB SP/LP DETECT
VS-116 BOARD (See Page 99, 103, 108)
IC402 SERVO/MECHA CONTROL
(VPP)
VDD
L401
AVDD
AVREF
BATT SENSE
PS401
CAM PWR SW COM
K OUT 1
LANC OUT
EVER 5V WAKE UP
LANC DC
CURRENT LIMITER
5.6V REG
UNREG
PWR CONT
IC409 LANC I/O
IC401
5V REG
BATTERY IN DETECT
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
Q401
BACK UP VDD
D401
LI 3V
CAM DD ON
VTR DD ON
BATT IN
BACK UP VDD
L403
RESET
LI PRE END
K OUT 0
K OUT 1
K IN 5
LANC POWER ON
CAM DD ON
VTR DD ON
BATT IN
VDD
RESET
LI PRE END
SYS RESET
IC403 MODE CONTROL
K OUT
K IN 5
CAM PWR SW COM
Q151, 152 CURRENT LIMITER
RF DC OUT
CN101
J517 DC OUT
W517
JK-99 BOARD (See Page 117)
VID 5V
R/P 5V
AUDIO 5V
IC121
IC151, IC152
IC154—IC156
IC158, IC159
IC001 VIDEO (2) (REC/PB) AMP
IC003
VIDEO (1) (Y/CHROMA) PROCESS
CN401
AUDIO 5V
CN102
EVF 5V
W405
BACK UP VDD
MT 5V
D 5V
D 4V
CAM 15V
CAM -9V
CAM 5V
CORE 4V
CN602
MIC 5V
AUDIO (REC/PB) PROCESS
IC601
(See Page 125)
AU-171 BOARD
CN553
MIC AMP
IC551
(See Page 126)
MA-206 BOARD
(See Page 129)
ELECTRIC VIEW FINDER
IC501 CRT DRIVE
VF-42 BOARD
CN501
EVF 5V


(See Page 135)
SW-223 BOARD
LOCK ← STANDBY
W519
CN902
K OUT 1
CAM PWR SW COM
MOTOR UNREG
VTR UNREG
LANC SIG
LANC DC
L909
VID 5V
RP 5V
EVF UNREG
EVF 5V
L910
L908
AU 5V
L911
D 5V
D 4V
CAM 15V
CAM -9V
L916
CAM 5V
CORE 4V
VTR DD ON
CAM DD ON
CN901
CN404
(See Page 121)
MECHA CHASSIS
IC001
CAPSTAN MOTOR DRIVE
TOP, END SENSOR REEL FG
(See Page 121)
SL-41 BOARD
IC521
DFG, DPG AMP REEL FG AMP
MT 5V
CN521
W522
CN406
Q409
5V REG
PS402
VOLTAGE ERROR AMP
IC410
LOADING MOTOR DRIVE
VR
SS 5V
MT UNREG
CAM PWR SW COM
K OUT 1
LANC OUT
LANC DC
CURRENT LIMITER
5.6V REG
UNREG
EVER 5V WAKE UP
PWR CONT
IC409
LANC I/O
IC405
EEP ROM
IC406
CHARACTER GENERATOR
IC408
DRUM MOTOR DRIVE
IC404
ATF SERVO CLOG DETECT PB SP/LP DETECT
IC402
SERVO/ MECHA CONTROL
PS401
L401
(VPP)
VDD
AVDD
AVREF
BATT SENSE
IC401
5V REG
BATTERY IN DETECT
DET
Q401
BACK UP VDD
D401
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
LI 3V
CAM DD ON
VTR DD ON
BATT IN
BACK UP VDD
L403
RESET
LI PRE END
K OUT 0
K OUT 1
K IN 5
LANC POWER ON
CAM DD ON
VTR DD ON
BATT IN
VDD
RESET
LI PRE END
SYS RESET
IC403
MODE CONTROL
VS-116 BOARD
(See Page 99, 103, 108)
CN403
K OUT 0
K IN 5
CAM PWR SW COM
CN407
Q151,152
CURRENT LIMITER
VID 5V
R/P 5V
AUDIO 5V
IC001
IC003
VIDEO (2) (REC/PB) AMP
VIDEO (1) (Y/CHROMA) PROCESS
IC121
IC151 , IC152
IC154 – IC156
IC158 , IC159
RF DC OUT
CN101
J517
DC OUT
W517
JK-99 BOARD
(See Page 117)
CN401
AUDIO 5V
CN102
EVF 5V
W405
BACK UP VDD
MT 5V
D 5V
D 4V
CAM 15V
CAM -9V
CAM 5V
CORE 4V
CN602
MIC 5V
AUDIO (REC/PB) PROCESS
IC601
(See Page 125)
AU-171 BOARD
CN553
MIC AMP
IC551
(See Page 126)
MA-206 BOARD
(See Page 129)
ELECTRIC VIEW FINDER
IC501
CRT DRIVE
VF-42 BOARD
CN501
EVF 5V
(See Page 115)
CN-84 BOARD
CN518
W991
(See Page 115)
CF-34 BOARD
S997
POWER
W991
LI 3V
CN516
LI-46 BOARD
(See Page 117)
LITHIUM BATTERY
VC-147 BOARD
(See Page 85, 88, 92)
CN801
-9V
15V
(See Page 78)
CD-116 BOARD
IC875
CN875
CCD IMAGER
CAM 5V
-9V
15V
V DRIVE
IC804
D 5V
TIMING GENERATOR
IC801
S/H, AGC, SIGNAL SEPARATOR
IC805
L804
A/D BIAS AMP
IC803
CAM 5V
4V
A/D CONVERTER
IC802
D 5V
FOCUS PREDRIVER
IC706
D 5V
CAM 5V
D/A CONVERTER (EVR)
IC702
3V
D 4V
SYNC GENERATOR
IC704
IC701
3V
D 4V
OPD
IC705
3V
4V
CORE 4V
CAMERA CORE (CAMERA SIGNAL PROCESS)
IC707
Q707
IC709
CAMERA CONTROL
A VREF
A VDD
VDD
VPP
CAM ON
CN701
CHECK PIN
B5V
CORE 4V
L706
BACK UP VDD
D 4V
Q702
3V REG
D 5V
L711
CAM 5V
CAM -9V
CAM 15V
L708
MT 5V
W402
D 5V
L717
EE PROM (NON-VOLATILE) MEMORY
IC712
IC851, IC852,
IC856
CAM 5V
IRIS DRIVE HALL AMP HALL BIAS
(See Page 93)
SENS VCC
CN851
LENS BLOCK
FOCUS END FAR SENSOR
FOCUS MOTOR DRIVE
IC853
MT 5V
ZOOM MOTOR DRIVE
IC854

3-11. CAMERA MICROPROCESSOR PIN FUNCTION (IC709 ON VC-147 BOARD: CXP80624-434R)

Pin No.	Signal	I/O	Function
1	ZOOM M REV	O	Zoom motor control signal. Normally "L". 20 msec period PWM signal when rotating to WIDE. "H" when rotating to TELE.
2	ZOOM M FWD	O	Zoom motor control signal. Normally "L". 20 msec period PWM signal when rotating to TELE. "H" when rotating to WIDE.
3			Not used.
4			
5			
6	FOC END LED	O	Focus end sensor LED control signal. Normally "L".
7	RT05/D5		Not used.
8	$\overline{\text{CORE RESET}}$	O	Camera core (IC707 on VC-147 board) reset signal. Normally "H". "L" when reset.
9	PDR RESET	O	Focus predriver (IC706 on VC-147 board) reset signal. Normally "H". "L" when reset.
10			Not used.
11	TG STBY0		
12	OPD RESET	O	OPD (IC705 on VC-147 board) reset signal. "H": camera mode. "L": VTR mode.
13			Not used.
14			
15			
16			
17			
18			
19			
20			
21	EPROM DO	O	Connected to +5V.
22	EPROM BUSY	I	BUSY signal from EEPROM. Normally "H". "L" pulse when data reading/writing.
23			Not used.
24			
25			Connected to GND.
26			Connected to +5V.
27	WIDE END		Focus Zone sensor input. Normally "L".
28	FOC END FAR	I	Focus edge sensor input. Normally "L".
29	$\overline{\text{CAM ON}}$	O	Power supply control signal. Normally "L".
30			Not used.
31			
32			
33			
34			
35			
36			
37	MP		Connected to GND.
38	$\overline{\text{CAM RESET}}$	I	Reset signal input. Normally "H". "L" when reset.
39	VSS		GND
40	XTAL	O	12 MHz clock oscillation circuit.
41	EXTAL	I	
42	$\overline{\text{CS CAM}}$	I	Chip select signal from mode control microprocessor. (IC403 on VS-116 board)
43	VTR SI	I	Serial data input from mode control microprocessor.
44	VTR SO	O	Serial data output from mode control microprocessor.
45	VTR SCK	I	Serial data transfer clock.
46			Not used.
47			
48			
49			Not used.
50	AVSS		GND
51	AVREF		Analog input port reference voltage (5V).
52	AVDD		Analog input port voltage (5V).
53			Connected to GND.
54			
55	MAN FOCUS (2)	I	Not used.
56	MAN FOCUS (1)	I	
57	ZOOM SW	I	Zoom key input. 0.4V: F. TELE, 1.4V: TELE and 3.7V: F. WIDE, 2.5V: WIDE and 5V: no input.
58	ZOOM POS X4	I	Zoom position voltage. approx. 0.4V (WIDE end) to approx. 2.8V (TELE end).
59	HALL A/D	I	Hall voltage. approx. 1V (iris open) to approx. 3V (iris close).
60	ZOOM POS	I	Zoom position voltage. approx. 0.2V (WIDE end) to approx. 2.4V (TELE end).
61			Connected to 5V.
62	PB V	I	VD signal input from mecha controler (IC402 on VS-116 board).
63	PG5/SYNC1		Connected to +5V.
64	VTR SYNC		
65	PB CTL		
66	DPG		
67			
68	AF BUSY	I	AF busy signal.
69			Not used.
70			
71			
72			
73	IRIS PWM	O	Iris control signal. 21 µsec period PWM signal.
74	ZM PWM	O	Zoom position detection voltage output. 21 µsec period PWM signal.
75			Not used.
76			Connected to +5V.
77	CAM SI	I	Serial data input.
78	CAM SO	O	Serial data output.
79	$\overline{\text{CAM SCK}}$	O	Serial data transfer clock.
80	AJST	I	Adjustment timing pulse input. Normally "H".
81	PI/TO		Not used.
82	PI/PWM		
83	PI/PO		
84	PI O		Connected to +5V.
85	PKO		
86	GND		GND
87	VDD		+5V power supply.
88	VPP		
89			Not used.
90	$\overline{\text{CS PDR}}$	O	Chip select signal to focus predriver (IC706 on VC-147 board).
91	$\overline{\text{CS CAM D/A}}$	O	Chip select signal to camera EVR (IC702 on VC-147 board).
92	CS ROM	O	Chip select signal to EEPROM (IC712 on VC-147 board).
93	$\overline{\text{CS OPD}}$	O	Chip select signal to OPD (IC705 on VC-147 board).
94	$\overline{\text{NTSC}}$	O	NTSC: "L", PAL: "H".
95	$\overline{\text{CS CORE}}$	O	Chip select signal to camera core (IC707 on VC-147 board).
96	$\overline{\text{CS TG}}$	O	Chip select signal to timing generator (IC801 on VC-147 board).
97			Not used.
98	$\overline{\text{CS A/D}}$	O	Chip select signal to Zoom position A/D converter. Not used.
99			Not used.
100			

3-12. MECHANISM CONTROL MICROPROCESSOR PIN FUNCTION (IC402 ON VS-116 BOARD: CXP80624-428R)

Pin No.	Port Name	Signal	I/O	Connection	Function
1	PB3/PP011	RP PB MODE	O	VS	REC/PB select signal of REC/PB amplifier (IC001 on VS-116 board) and ATF servo IC (IC404 on VS-116 board). "H": PB.
2	PB2/PP010	$\overline{\text{FE ON}}$	O	VS	Flying erase oscillation ON/OFF control signal. "L": oscillation.
3	PB1/PP09	JOG VD	O	VS	False VD signal to be inserted into playback video signal during variable speed playback.
4	PB0/PP08	JOG	O	VS	Variable speed/normal speed playback select signal of video circuit. "H" when variable speed playback.
5	PC7/RT07	JACK $\overline{\text{IN}}$/OUT	I	VS	Not used. Connected to +5V.
6	PC6/RT06	1.7M DET	I	VS	Not used.
7	PC5/RT05	JACK $\overline{\text{MONO}}$/STE DET	I	VS	
8	PC4/RT04	INT VD	I		
9	PC3/RT03	PB V (SYSTEM SYNC)	O	MODE CON	V sync for mode controller.
10	PC2/RT018	$\overline{\text{SYNC DET OUT}}$	O	VS	Sync detect output. "L" when Sync is detected.
11	PC1/RT017	E/$\overline{\text{L}}$ DET	I	VS	Not used.
12	PC0/RT016	MIC $\overline{\text{MONO}}$/ST DET	I	AU	
13	PJ7	M SW 0	I	MD	Mode switch input.
14	PJ6	M SW 1	I	MD	
15	PJ5	M SW 2	I	MD	
16	PJ4	$\overline{\text{CC DOWN}}$	I	MD	Cassette compartment down switch input. "L": down.
17	PJ3	$\overline{\text{REC PROOF}}$	I	MD	Erasure protection switch input. "L" when REC prohibit.
18	PJ2	ME/$\overline{\text{MP}}$	I	MD	ME/MP switch input. "L": MP, "H": ME.
19	PJ1	HG/$\overline{\text{NOR}}$	I	MD	Connected to GND.
20	PJ0	VIDEO MUTE	O	VS	Video output mute signal. "H": mute.
21	PD7	LINE MIX	I	VS	Not used.
22	PD6	MAT SEL 1	I	VS	
23	PD5	MAT SEL 2	I	VS	
24	PD4	MAT ON/$\overline{\text{OFF}}$	O	VS	
25	PD3	E MODE	O	VS	
26	PD2	CAM/$\overline{\text{LINE}}$	O	VS	Camera input/line input select signal. "H" when camera input.
27	PD1	DS ON	O	VS	Data screen ON/OFF signal. "H": ON.
28	PD0	$\overline{\text{EDIT}}$	O	VS	Video circuit EDIT/NORMAL switch signal. "L": EDIT.
29	PH7	UNLOAD	O	VS	Loading motor control signal. "H" or "H" pulse when unloading.
30	PH6	LOAD	O	VS	Loading motor control signal. "H" or "H" pulse when loading.
31	PH5	$\overline{\text{LM LIM COM}}$	O	VS	Loading motor limiter control signal. Temporary "H" when loading.
32	PH4	COMP REC	O	VS	Not used.
33	PH3	DRUM REV	O	VS	Drum rotating control signal . Normally "L".
34	PH2		O		N.C.
35	PH1		O		
36	PH0	$\overline{\text{REEL HALL CONT}}$	O	VS	Reel FG sensor (HALL element) power supply control signal.
37	MP	MP			Connected to GND.
38	RST	$\overline{\text{RESET}}$	I	MODE CON	Reset signal from mode control microprocessor. "L" when reset.
39	VSS	VSS			GND
40	XTAL	XTAL	I	VS	11.718 MHz clock oscillation circuit.
41	EXTAL	EXTAL	O	VS	
42	CSO	$\overline{\text{VTR COSMO CS}}$	I	MODE CON	Chip select signal from mode control microprocessor (VS-116 board IC403)
43	S10	DATA TO SLVE	I	MODE CON	Serial data input from mode control microprocessor.
44	S00	DATA TO MSTR	O	MODE CON	Serial data output to mode control microprocessor.
45	SCKO	SCK	I	MODE CON	Serial clock input from mode control microprocessor.
46	PF7/AN11	AUDIO MUTE	O	VS	Audio output mute signal. "H": mute.
47	PF6/AN10	1.7M OFF	O	VS	Not used.
48	PF5/AN9	GND	I		GND
49	PF4/AN8	GND	I		
50	AVSS	AVSS			Analog port GND.
51	AVREF	AVREF			Analog port reference voltage. Connected to +5V.
52	AVDD	VDD			Analog port power supply (5V).
53	PF3/AN7	N.C.			Connected to GND.
54	PF2/AN6	END SENS	I	VS	Tape end detection signal. Normally "L", "H" pulse: tape end.
55	PF1/AN5	TOP SENS	I	VS	Tape top detection signal. Normally "L", "H" pulse: tape top.
56	PF0/AN4	DEW	I	VS	Dew condensation detection signal. "L" when dew condensation.
57	AN3	BATT SENSE	I	VS	Battery voltage input for battery end detection. 1/2 divided by RB401.
58	AN2	ATF ERROR	I	VS	ATF error, ATF lock error input.
59	AN1	S REEL FG	I	VS	S reel FG signal input.
60	AN0	T REEL FG	I	VS	T reel FG signal input.
61	PG7/EXI1	PG7 (N.C.)			Connected to GND.
62	PG6/EXI0	CAM VD	I	CAM SG	VD signal from camera circuit sync generator. V period pulse.
63	PG5/SYNC1	FLD	I	CAM SG	FIELD signal from camera circuit sync generator. 2V period pulse.
64	PG4/SYNC0	VTR SYNC	I	VS	Composite sync signal separated from REC/PB Y signal.
65	PG3/PBCTL	PB SP/LP DET	I	VS	Discriminates PB tape REC mode when CUE/REVIEW/FF and REW. "L": LP.
66	PG2/DPG	DRUM PG	I	VS	Drum PG signal input. For drum phase servo 40 msec period "H" pulse.
67	PG1/DFG	DRUM FG	I	VS	Drum FG signal input. For drum speed servo 3.3 msec period pulse.
68	PG0/CFG	CAP FG	I	MD	Capstan FG signal input. For capstan speed servo. Approx. 1388 Hz when REC/PB (SP).
69	PE7/DAB0	N.C.	O		N.C.
70	PE6/DAB0	T/E LED ON	O	VS	Tape LED ON/OFF signal. 100 msec period "H" pulse when REC/PB.
71	PE5/DAA1	N.C.	O		N.C.
72	PE4/DAA0	N.C.	O		
73	PE3/PWM1	CAP PWM	O	VS	Capstan error signal output 20.15 µsec PWM signal.
74	PE2/PWM0	DRUM PWM	O	VS	Drum error signal output 20.15 µsec PWM signal.
75	PE1/EC/INT2	C FG	I	MD	Capstan FG signal input. For tape counter.
76	PE0/INT0	$\overline{\text{S JACK IN}}$			Not used, connected to +5V.
77	P17/ST1	LANC IN	I	VS	Control L serial data input.
78	P16/SO1	LANC OUT	O	VS	Control L serial data output.
79	P15/SCK1	LM LIMIT DET	I	VS	Loading motor limiter ON detection signal. Normally "H", "L" when limiter ON.
80	P14/INT1	AGC SLOW			Not used.
81	P13/TO	DRUM ON	O	VS	Drum driver ON/OFF control signal. "H" when drum ON.
82	P12/PWM	CLOG	O	VS	Head clog detection signal. "L" when no trouble.
83	P11/PO	REF PILOT	O	VS	ATF servo reference pilot signal. Synchronized when drum rotation to output by selecting four frequencies. f1=101.0 kHz, f2=117.2 kHz, f3=162.8 kHz and f4=146.5 kHz.
84	P10/PCK				Connected to +5V.
85	PKO	13/10 SW	I	MD	Not used.
86	VSS	VSS			GND
87	VDD	VDD			VDD
88	N.C.	(VPP)			Connected to +5V.
89	PA7/PP07	DRUM ACC	O	VS	Drum motor acceleration signal. Not used.
90	PA6/PP06	DRUM BRK	O	VS	Drum motor brake signal. Normally "L".
91	PA5/PP05	SP/$\overline{\text{LP}}$	O	VS	SP/LP select signal. "L": LP.
92	PA4/PP04	AU IN/OUT	O		Not used.

	BL	END	EJECT	USE	LOAD	READY	TURN	REC/PB	FF
M SW 0	L	L	L	H	L	H	H	L	L
M SW 1	L	H	L	L	L	L	H	H	L
M SW 2	L	H	H	H	H	L	L	L	L

45	VTR SCK	I	Serial data transfer clock.
46			Not used.
47			
48			

95	$\overline{\text{CS CORE}}$	O	Chip select signal to camera core (IC707 on VC-147 board).
96	$\overline{\text{CS TG}}$	O	Chip select signal to timing generator (IC801 on VC-147 board).
97			Not used.
98	$\overline{\text{CS A/D}}$	O	Chip select signal to Zoom position A/D converter. Not used.
99			Not used.
100			

3-12. MECHANISM CONTROL MICROPROCESSOR PIN FUNCTION (IC402 ON VS-116 BOARD: CXP80624-428R)

Pin No.	Port Name	Signal	I/O	Connection	Function
1	PB3/PP011	RP PB MODE	O	VS	REC/PB select signal of REC/PB amplifier (IC001 on VS-116 board) and ATF servo IC (IC404 on VS-116 board). "H": PB.
2	PB2/PP010	$\overline{\text{FE ON}}$	O	VS	Flying erase oscillation ON/OFF control signal. "L": oscillation.
3	PB1/PP09	JOG VD	O	VS	False VD signal to be inserted into playback video signal during variable speed playback.
4	PB0/PP08	JOG	O	VS	Variable speed/normal speed playback select signal of video circuit. "H" when variable speed playback.
5	PC7/RT07	JACK $\overline{\text{IN}}$/OUT	I	VS	Not used. Connected to +5V.
6	PC6/RT06	1.7M DET	I	VS	Not used.
7	PC5/RT05	JACK $\overline{\text{MONO}}$/STE DET	I	VS	
8	PC4/RT04	INT VD	I		
9	PC3/RT03	PB V (SYSTEM SYNC)	O	MODE CON	V sync for mode controller.
10	PC2/RT018	$\overline{\text{SYNC DET OUT}}$	O	VS	Sync detect output. "L" when Sync is detected.
11	PC1/RT017	E/$\overline{\text{L}}$ DET	I	VS	Not used.
12	PC0/RT016	MIC $\overline{\text{MONO}}$/ST DET	I	AU	
13	PJ7	M SW 0	I	MD	Mode switch input.
14	PJ6	M SW 1	I	MD	
15	PJ5	M SW 2	I	MD	
16	PJ4	$\overline{\text{CC DOWN}}$	I	MD	Cassette compartment down switch input. "L": down.
17	PJ3	$\overline{\text{REC PROOF}}$	I	MD	Erasure protection switch input. "L" when REC prohibit.
18	PJ2	ME/$\overline{\text{MP}}$	I	MD	ME/MP switch input. "L": MP, "H": ME.
19	PJ1	HG/$\overline{\text{NOR}}$	I	MD	Connected to GND.
20	PJ0	VIDEO MUTE	O	VS	Video output mute signal. "H": mute.
21	PD7	LINE MIX	I	VS	Not used.
22	PD6	MAT SEL 1	I	VS	
23	PD5	MAT SEL 2	I	VS	
24	PD4	MAT ON/$\overline{\text{OFF}}$	O	VS	
25	PD3	E MODE	O	VS	
26	PD2	CAM/$\overline{\text{LINE}}$	O	VS	Camera input/line input select signal. "H" when camera input.
27	PD1	DS ON	O	VS	Data screen ON/OFF signal. "H": ON.
28	PD0	$\overline{\text{EDIT}}$	O	VS	Video circuit EDIT/NORMAL switch signal. "L": EDIT.
29	PH7	UNLOAD	O	VS	Loading motor control signal. "H" or "H" pulse when unloading.
30	PH6	LOAD	O	VS	Loading motor control signal. "H" or "H" pulse when loading.
31	PH5	$\overline{\text{LM LIM COM}}$	O	VS	Loading motor limiter control signal. Temporary "H" when loading.
32	PH4	COMP REC	O	VS	Not used.
33	PH3	DRUM REV	O	VS	Drum rotating control signal . Normally "L".
34	PH2		O		N.C.
35	PH1		O		
36	PH0	$\overline{\text{REEL HALL CONT}}$	O	VS	Reel FG sensor (HALL element) power supply control signal.
37	MP	MP			Connected to GND.
38	RST	$\overline{\text{RESET}}$	I	MODE CON	Reset signal from mode control microprocessor. "L" when reset.
39	VSS	VSS			GND
40	XTAL	XTAL	I	VS	11.718 MHz clock oscillation circuit.
41	EXTAL	EXTAL	O	VS	
42	CSO	$\overline{\text{VTR COSMO CS}}$	I	MODE CON	Chip select signal from mode control microprocessor (VS-116 board IC403)
43	S10	DATA TO SLVE	I	MODE CON	Serial data input from mode control microprocessor.
44	S00	DATA TO MSTR	O	MODE CON	Serial data output to mode control microprocessor.
45	SCKO	SCK	I	MODE CON	Serial clock input from mode control microprocessor.
46	PF7/AN11	AUDIO MUTE	O	VS	Audio output mute signal. "H": mute.
47	PF6/AN10	1.7M OFF	O	VS	Not used.
48	PF5/AN9	GND	I		GND
49	PF4/AN8	GND	I		
50	AVSS	AVSS			Analog port GND.
51	AVREF	AVREF			Analog port reference voltage. Connected to +5V.
52	AVDD	VDD			Analog port power supply (5V).
53	PF3/AN7	N.C.			Connected to GND.
54	PF2/AN6	END SENS	I	VS	Tape end detection signal. Normally "L", "H" pulse: tape end.
55	PF1/AN5	TOP SENS	I	VS	Tape top detection signal. Normally "L", "H" pulse: tape top.
56	PF0/AN4	DEW	I	VS	Dew condensation detection signal. "L" when dew condensation.
57	AN3	BATT SENSE	I	VS	Battery voltage input for battery end detection. 1/2 divided by RB401.
58	AN2	ATF ERROR	I	VS	ATF error, ATF lock error input.
59	AN1	S REEL FG	I	VS	S reel FG signal input.
60	AN0	T REEL FG	I	VS	T reel FG signal input.
61	PG7/EXI1	PG7 (N.C.)			Connected to GND.
62	PG6/EXI0	CAM VD	I	CAM SG	VD signal from camera circuit sync generator. V period pulse.
63	PG5/SYNC1	FLD	I	CAM SG	FIELD signal from camera circuit sync generator. 2V period pulse.
64	PG4/SYNC0	VTR SYNC	I	VS	Composite sync signal separated from REC/PB Y signal.
65	PG3/PBCTL	PB SP/LP DET	I	VS	Discriminates PB tape REC mode when CUE/REVIEW/FF and REW. "L": LP.
66	PG2/DPG	DRUM PG	I	VS	Drum PG signal input. For drum phase servo 40 msec period "H" pulse.
67	PG1/DFG	DRUM FG	I	VS	Drum FG signal input. For drum speed servo 3.3 msec period pulse.
68	PG0/CFG	CAP FG	I	MD	Capstan FG signal input. For capstan speed servo. Approx. 1388 Hz when REC/PB (SP).
69	PE7/DAB0	N.C.	O		N.C.
70	PE6/DAB0	T/E LED ON	O	VS	Tape LED ON/OFF signal. 100 msec period "H" pulse when REC/PB.
71	PE5/DAA1	N.C.	O		N.C.
72	PE4/DAA0	N.C.	O		
73	PE3/PWM1	CAP PWM	O	VS	Capstan error signal output 20.15 µsec PWM signal.
74	PE2/PWM0	DRUM PWM	O	VS	Drum error signal output 20.15 µsec PWM signal.
75	PE1/EC/INT2	C FG	I	MD	Capstan FG signal input. For tape counter.
76	PE0/INT0	$\overline{\text{S JACK IN}}$			Not used, connected to +5V.
77	P17/ST1	LANC IN	I	VS	Control L serial data input.
78	P16/SO1	LANC OUT	O	VS	Control L serial data output.
79	P15/SCK1	LM LIMIT DET	I	VS	Loading motor limiter ON detection signal. Normally "H", "L" when limiter ON.
80	P14/INT1	AGC SLOW			Not used.
81	P13/TO	DRUM ON	O	VS	Drum driver ON/OFF control signal. "H" when drum ON.
82	P12/PWM	CLOG	O	VS	Head clog detection signal. "L" when no trouble.
83	P11/PO	REF PILOT	O	VS	ATF servo reference pilot signal. Synchronized when drum rotation to output by selecting four frequencies. f1=101.0 kHz, f2=117.2 kHz, f3=162.8 kHz and f4=146.5 kHz.
84	P10/PCK				Connected to +5V.
85	PKO	13/10 SW	I	MD	Not used.
86	VSS	VSS			GND
87	VDD	VDD			VDD
88	N.C.	(VPP)			Connected to +5V.
89	PA7/PP07	DRUM ACC	O	VS	Drum motor acceleration signal. Not used.
90	PA6/PP06	DRUM BRK	O	VS	Drum motor brake signal. Normally "L".
91	PA5/PP05	SP/$\overline{\text{LP}}$	O	VS	SP/LP select signal. "L": LP.
92	PA4/PP04	AU IN/OUT	O		Not used.
93	PA3/PP03	VIDEO O SW	O	VS	VIDEO OUT inhibit signal. "H": inhibit.
94	PA2/PP02	VIDEO I SW	O	VS	VIDEO IN/OUT select signal. Not used.
95	PA1/PP01	VA PB MODE	O	ALL	Video/audio circuit REC/PB select signal. "H": PB.
96	PA0/PP00	VI SWP	O	VS	RF switching pulse signal for video circuit. 25 Hz, 50% duty pulse.
97	PB7/PP015	RF SWP	O	ALL	RF switching pulse signal for REC/PB amp and Audio circuit. 25 Hz, 50% duty pulse.
98	0	H CHG	O	VS	Not used.
99	11	CAP ON	O	MD	Capstan driver ON/OFF control signal. "H" when capstan ON.
100	PB4/PP012	CAP FWD/$\overline{\text{RVS}}$	O	MD	Capstan rotating direction control signal. "H": FWD, "L": RVS.

	BL	END	EJECT	USE	LOAD	READY	TURN	REC/PB	FF
M SW 0	L	L	L	H	L	H	H	L	L
M SW 1	L	H	L	L	L	L	H	H	L
M SW 2	L	H	H	H	H	L	L	L	L

3-13. MODE CONTROL MICROPROCESSOR PIN FUNCTION (IC403 ON VS-116 BOARD: μPD75316GF-463-3B9)

Pin No.	Port Name	Signal	I/O	Connection	Function
1	S12	S12	O		Segment terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V) Not used.
2	S13	S13	O		
3	S14	S14	O		
4	S15	S15	O		
5	S16	S16	O		
6	S17	S17	O		
7	S18	S18	O		
8	S19	S19	O		
9	S20	S20	O		
10	S21	S21	O		
11	S22	S22	O		
12	S23	S23	O		
13	S24/BP0	$\overline{\text{EEPROM CS}}$	O		Chip select signal to EEPROM (IC406 on VS-116 board). 1/2V period "L" pulse.
14	S25/BP1	N.C	O		Not used.
15	S26/BP2	TG STBY 1	O	CAM	Power save control signal to timing generator (IC801 on VC-147 board). Normally "L".
16	S27/BP3		O		N.C.
17	S28/BP4	$\overline{\text{CS TITLE}}$	O	CAM	Not used.
18	S29/BP5	REMO CS	O		Chip select signal to sircs remote controller (IC907 on VS-116 board). 1V period "L" pulse.
19	S30/BP6	S RAM CS	O		Not used.
20	S31/BP7	$\overline{\text{CAM COSM CS}}$	O	CAM	Chip select signal to camera controller (IC709 on VC-147 board). 1V period "L" pulse.
21	COM0	COM 0	O		Common terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V) Not used.
22	COM1	COM 1	O		
23	COM2	COM 2	O		
24	COM3	COM 3	O		
25	BIAS	BIAS	O		Bias voltage output for voltage deviding resistor. Not used.
26	VLC0	VCC 0	I		Power source 0 input
27	VLC1	VCC 1	I		Power source 1 input Power source for LCD dirve. Not used.
28	VLC2	VCC 2	I		Power source 2 input
29	P40	K OUT 4	O	all	KEY matrix output. 1V period "L" pulse output when corresponding key is pressed. "L" when other cases.
30	P41	K OUT 5	O	all	
31	P42	$\overline{\text{SYS RESET}}$	O	all	Output signal to reset each IC when power is turned on. Normally "H".
32	P43	$\overline{\text{TALLY}}$	O	EVF	Tally LED ON/OFF signal. "L": ON.
33	VSS	VSS			GND
34	P50	K OUT 0	O	all	KEY matrix output. 1V period "L" pulse output when corresponding key is pressed. "L" when other cases.
35	P51	K OUT 1	O	all	
36	P52	K OUT 2	O	all	
37	P53	K OUT 3	O	all	
38	P00/INT4	$\overline{\text{BATT IN}}$	I		Clock select to 32 kHz when "L" and to 4.19 MHz with "H" when Battery is turned on. "L" is select.
39	P01/$\overline{\text{SCK}}$	$\overline{\text{SCK}}$	O	all	Serial clock output terminal, Serial clock (2 μS) communication.
40	P02/SO/SB0	DATA TO SLVE	O	all	Serial bus output terminal, Serial clock (2 μS) communication.
41	P03/SI/SB1	DATA TO MSTR	I	all	Serial bus input terminal, Serial clock (2 μS) communication.
42	P10/INT0	SYSTEM SYNC	I	all	(Edge detection vector interruption), System synchronization input port from CXP80624 (IC402 on VS-116 board).
43	P11/INT1	$\overline{\text{LI PRE END}}$	I		(Edge detection vector interruption), Lithium PRE END is selected with "L".
44	P12/INT2	$\overline{\text{LANC PWR ON}}$	I		Power on signal input from wired remote control. "L" when power switch pressed.
45	P13/TIO	TITLE BUSY	I	CAM	Not used.
46	P20/PT00	VTR DD ON	O	PS	VTR power source (VIDEO 5V, RP 5V, AUDIO 5V, EVF 5V, D5V, (SS5V), D4V, CORE 4V) control signal. "H" when power switch is in "PLAYER" or "CAMERA" position.
47	P21	CAM DD ON	O	PS	CAMERA power source (CAM 5V, +15V, –9V) control signal. "H" when power switch is in "CAMERA" position.
48	P22/PCL	$\overline{\text{VIDEO D/A CS}}$	O	VA	Serial data load signal to video circuit EVR (IC156, 158 on VS-116 board). 1V period "H" pulse.
49	P23/BUZ	BEEP	O		Not used.
50	P30/LCDCL	$\overline{\text{VIDEO CS}}$	O	VA	Chip select signal to Y process IC (IC151 on VS-116 board). 1V period "L" pulse.
51	P31/SYNC	$\overline{\text{VTR COSM CS}}$	O		Chip select signal to mechanism controller (IC402 on VS-116 board). 1V period "L" pulse.
52	P32	$\overline{\text{SG CS}}$	O	CAM	Chip select signal to sync generator (IC704 on VC-147 board). 1V period "L" pulse.
53	P33	$\overline{\text{CRTC CS}}$	O	CAM	Strobe signal for character generator (IC406 on VS-116 board). 1V period "H" pulse.
54	VDD	VDD			VDD
55	XT1	XT1	I		SUB system clock. 32 kHz oscillation terminal.
56	XT2	XT2			
57	N.C.	N.C.			N.C.
58	X1	X1	I		Main system clock. 4.19 MHz oscillation terminal.
59	X2	X2	I		
60	P60/KK0	K IN 0	I	all	KEY matrix input. 1V period "L" pulse input when corresponding key is pressed. "H" when other case.
61	P61/KR1	K IN 1	I	all	
62	P62/KR2	K IN 2	I	all	
63	P63/KR3	K IN 3	I	all	
64	P70/KR4	K IN 4	I	all	
65	P71/KP5	K IN 5	I	all	
66	P72/KP6	K IN 6	I	all	
67	P73/KP7	$\overline{\text{CC DOWN}}$	I	MD	Cassette compartment lock switch input. "L": Lock.
68	$\overline{\text{RESET}}$	$\overline{\text{RESET}}$	I		System reset input. "L": Reset, Normally: "H".
69	S0	CLK CHK	O		N.C.
70	S1	S1	O		Segment terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V) Not used.
71	S2	S2	O		
72	S3	S3	O		
73	S4	S4	O		
74	S5	S5	O		
75	S6	S6	O		
76	S7	S7	O		
77	S8	S8	O		
78	S9	S9	O		
79	S10	S10	O		
80	S11	S11	O		

3-14. INTERFACE

3-14-1. System Control – Video/Audio Block Interface (VS-116 BOARD)

NAME	I/O	No.	VTR MODE																CAMERA MODE					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB·PAUSE	FRAME	SLOW	X2	SHUTTLE EDIT *3		REC *4	REC *4 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW					FWD	REV					FWD	RVS	FWD	RVS
SP/$\overline{\text{LP}}$	O	IC402 (91)	*1	H	H	*2	*2	*2	*2	*2	*1	*1	*1	*1	*2	*2	*6	H/L	H/L	*6	*2	*2	*2	*2
VA PB MODE	O	IC402 (95)	L	L	L	H	H	H	H	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H
AUDIO MUTE *13	O	IC402 ㊻	L	L	L	H	H	L	H	H	H	H	H	L	H	H	L	L	L	L	H	H	H	H
VIDEO MUTE	O	IC402 ⑳	*14	*14	*14	*15	*15	*15	*15	*15	*15	*15	*15	*15	*15	*15	*14	*14	L	L	*15	*15	*15	*15
CAM/$\overline{\text{LINE}}$	O	IC402 ㉖	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	L	L	L	L
JOG VD	O	IC402 ③	L	L	L	*5	*5	L	*5	*5	*5	*5	*5	*5	*5	*5	L	L	L	L	*5	*5	*5	*5
RP PB MODE	O	IC402 ①	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
$\overline{\text{FE ON}}$	O	IC402 ②	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
RF SWP	O	IC402 (97)	L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
JOG	O	IC402 ④	L	L	L	H	H	L	H	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H
$\overline{\text{VIDEO CS}}$	O	IC403 ㊿	V period "L" pulse																					
$\overline{\text{VIDEO D/A CS}}$	O	IC403 ㊽	V period 'H" pulse																					
DATA TO MSTR	I	IC403 ㊶	V period "L" pulse																					
DATA TO SLVE	O	IC403 ㊵	V period pulse train																					
$\overline{\text{SCK}}$	I	IC403 ㊴	V period "H" pulse																					
PB SP/$\overline{\text{LP}}$ DET	I	IC402 (65)	L	*10	*10	*10	*10	L	*10	*10	*10			*10	L	*10	H	H	H	H	L	*10	L	*10
CLOG	I	IC402 (82)	H	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	H	*11	*11	H	*11	*11	*11	*11
VTR SYNC	I	IC402 (64)	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12

*1. Outputs discrimination result of the mode just before. "H": SP mode, "L": LP mode.
*2. Outputs discrimination result of the playback tape. "H" : SP mode, "L": LP mode.
*3. Edit search button pressed when playback pause mode.
*4. Mode for adjustment.
*5. False VD signal
*6. By REC MODE switch, "H": SP mode, "L": LP mode.
*7. 25 Hz duty 50% pulse (synchronized with drum rotation)
*10. "H": SP recording area on tape. "L": LP recording area.
*11. "H": no recording area or drop out area on tape. Head clog detection input.
*12. Composite sync signal input separated from line input video signal, camera video signal or playback video signal. (polarity +)
*13. "H" during camera mode load/unload.
*14. "L" when external input (video) present. "H" when other cases.
*15. "H" when tape no signal. "L" when other cases.

3-14-2. System Control – Servo Block Interface

VTR MODE

40	P02/SO/SB0	DATA TO SLVE	O	all	Serial bus output terminal, Serial clock (2 μS) communication.
41	P03/SI/SB1	DATA TO MSTR	I	all	Serial bus input terminal, Serial clock (2 μS) communication.
42	P10/INT0	SYSTEM SYNC	I	all	(Edge detection vector interruption), System synchronization input port from CXP80624 (IC402 on VS-116 board).

77	S8	S8	O	
78	S9	S9	O	
79	S10	S10	O	
80	S11	S11	O	

3-14. INTERFACE

3-14-1. System Control – Video/Audio Block Interface (VS-116 BOARD)

NAME	I/O	No.	VTR MODE																CAMERA MODE					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB·PAUSE	FRAME	SLOW	X2	SHUTTLE EDIT *3		REC *4	REC *4 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW					FWD	REV					FWD	RVS	FWD	RVS
SP/LP	O	IC402 (91)	*1	H	H	*2	*2	*2	*2	*2	*1	*1	*1	*1	*2	*2	*6	H/L	H/L	*6	*2	*2	*2	*2
VA PB MODE	O	IC402 (95)	L	L	L	H	H	H	H	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H
AUDIO MUTE *13	O	IC402 ㊻	L	L	L	H	H	L	H	H	H	H	H	L	H	H	L	L	L	L	H	H	H	H
VIDEO MUTE	O	IC402 ⑳	*14	*14	*14	*15	*15	*15	*15	*15	*15	*15	*15	*15	*15	*15	*14	*14	L	L	*15	*15	*15	*15
CAM/LINE	O	IC402 ㉖	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	L	L	L	L
JOG VD	O	IC402 ③	L	L	L	*5	*5	L	*5	*5	*5	*5	*5	*5	*5	*5	L	L	L	L	*5	*5	*5	*5
RP PB MODE	O	IC402 ①	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
FE ON	O	IC402 ②	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
RF SWP	O	IC402 (97)	L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
JOG	O	IC402 ④	L	L	L	H	H	L	H	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H
VIDEO CS	O	IC403 ㊿	V period "L" pulse																					
VIDEO D/A CS	O	IC403 ㊽	V period 'H" pulse																					
DATA TO MSTR	I	IC403 ㊶	V period "L" pulse																					
DATA TO SLVE	O	IC403 ㊵	V period pulse train																					
SCK	I	IC403 ㊴	V period "H" pulse																					
PB SP/LP DET	I	IC402 (65)	L	*10	*10	*10	*10	L	*10	*10	*10			*10	L	*10	H	H	H	H	L	*10	L	*10
CLOG	I	IC402 (82)	H	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	H	*11	*11	H	*11	*11	*11	*11
VTR SYNC	I	IC402 (64)	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12

*1. Outputs discrimination result of the mode just before. "H": SP mode, "L": LP mode.
*2. Outputs discrimination result of the playback tape. "H" : SP mode, "L": LP mode.
*3. Edit search button pressed when playback pause mode.
*4. Mode for adjustment.
*5. False VD signal
*6. By REC MODE switch, "H": SP mode, "L": LP mode.
*7. 25 Hz duty 50% pulse (synchronized with drum rotation)
*10. "H": SP recording area on tape. "L": LP recording area.
*11. "H": no recording area or drop out area on tape. Head clog detection input.
*12. Composite sync signal input separated from line input video signal, camera video signal or playback video signal. (polarity +)
*13. "H" during camera mode load/unload.
*14. "L" when external input (video) present. "H" when other cases.
*15. "H" when tape no signal. "L" when other cases.

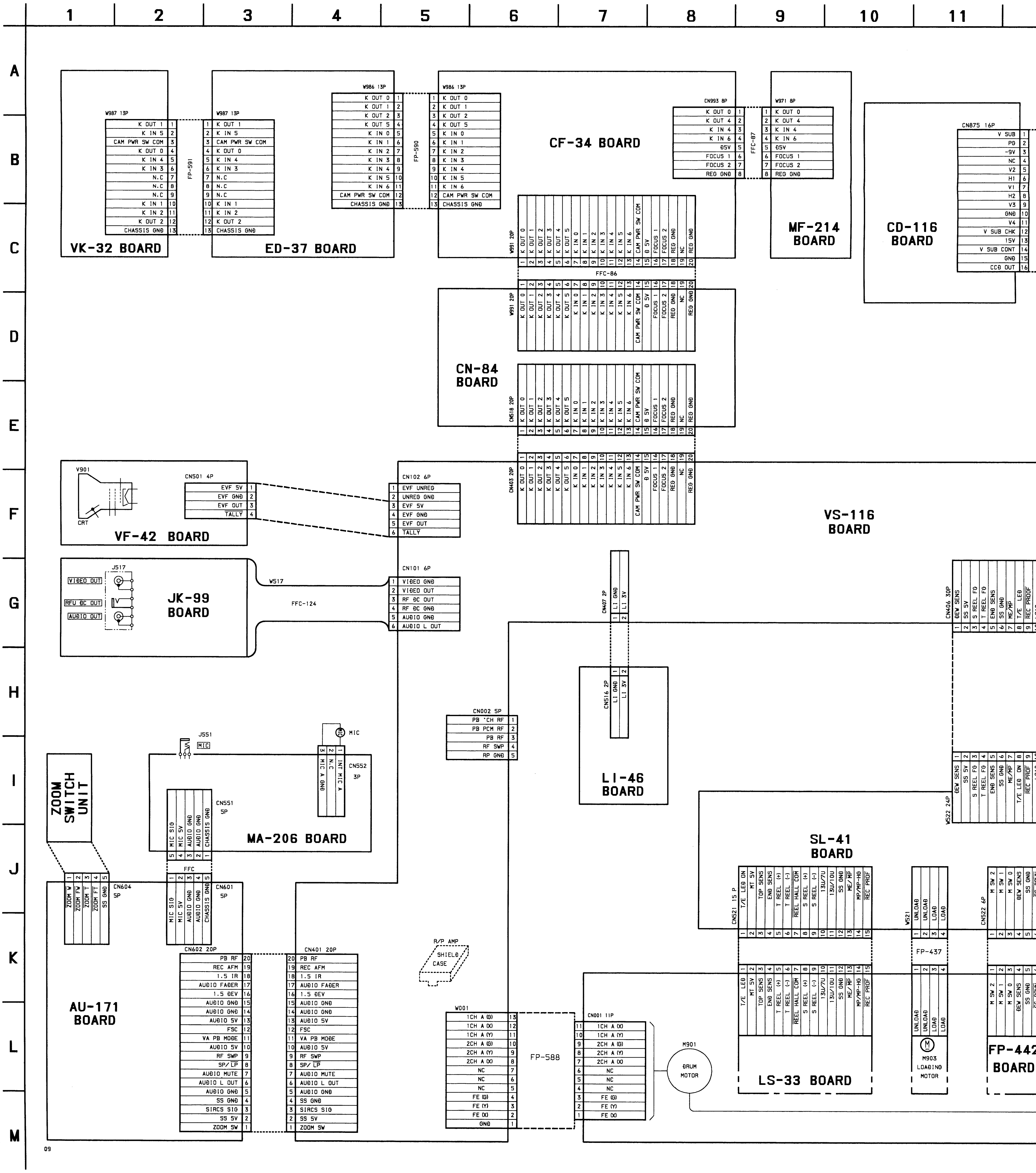
3-14-2. System Control – Servo Block Interface

NAME	I/O	No.	VTR MODE																CAMERA MODE					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB·PAUSE	FRAME	SLOW	X2	SHUTTLE EDIT *13		REC *14	REC *14 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW					FWD	REV					FWD	RVS	FWD	RVS
T.REEL FG	I	IC402 (60)	–	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
S.REEL FG	I	IC402 (59)	–	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
ATF ERROR	I	IC402 (58)	–	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
DRUM PG	I	IC402 (66)	–	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3
DRUM FG	I	IC402 (67)	–	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP FG/ CFG HMS	I	IC402 (68), (75)	–	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
CAP ON	O	IC402 (99)	L	H	H	H	H	H	H	H	L	*8	*8	H	H	H	H	L	L	H	H	H	H	H
REF PILOT	O	IC402 (83)	*7	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
RP PB MODE	O	IC402 ①	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
DRUM REV *10	O	IC402 ㉝	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
CAP FWD/ RVS	O	IC402 (100)	L	H	L	H	L	H	H	L	L	*8	*8	H	H	L	H	L	L	H	H	L	H	L
DRUM PWM	O	IC402 (74)	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9
CAP PWM	O	IC402 (73)	L	*9	*9	*9	*9	*9	*9	*9	L	*9	*9	*9	*9	*9	*9	L	L	*9	*9	*9	*9	*9
LM LIM CONT *11	O	IC402 ㉛	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
DRUM ON *12	O	IC402 (81)	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H

*1. Inputting waveform which is similar to sine wave according to reel rotation.
*2. ATF error voltage input
*3. One PG pulse input per one drum rotation, approx. 25 Hz.
*4. 12 FG pulses input per one drum rotation, approx. 300 Hz.
*5. 520 FG pulses input per one capstan rotation. Approx. 1388 Hz when REC/PB (SP). 694 Hz when PB (LP).
*6. Four frequencies output synchronized with drum rotation. f1=101.0 kHz, f2=117.2 kHz, f3=162.8 kHz and f4=146.5 kHz.
*7. f2 (117.2 kHz) output
*8. "H" pulse when tape run.
*9. 21.5 μsec period PWM signal
*10. Normally "H". Temporary "L" when load (drum reverse rotation).
*11. Temporary "H" when cassette loading (finger catch protection).
*12. "H": approx. 1.3 Vdc
*13. Edit search button pressed when playback pause mode.
*14. Mode for adjustment.

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM


1
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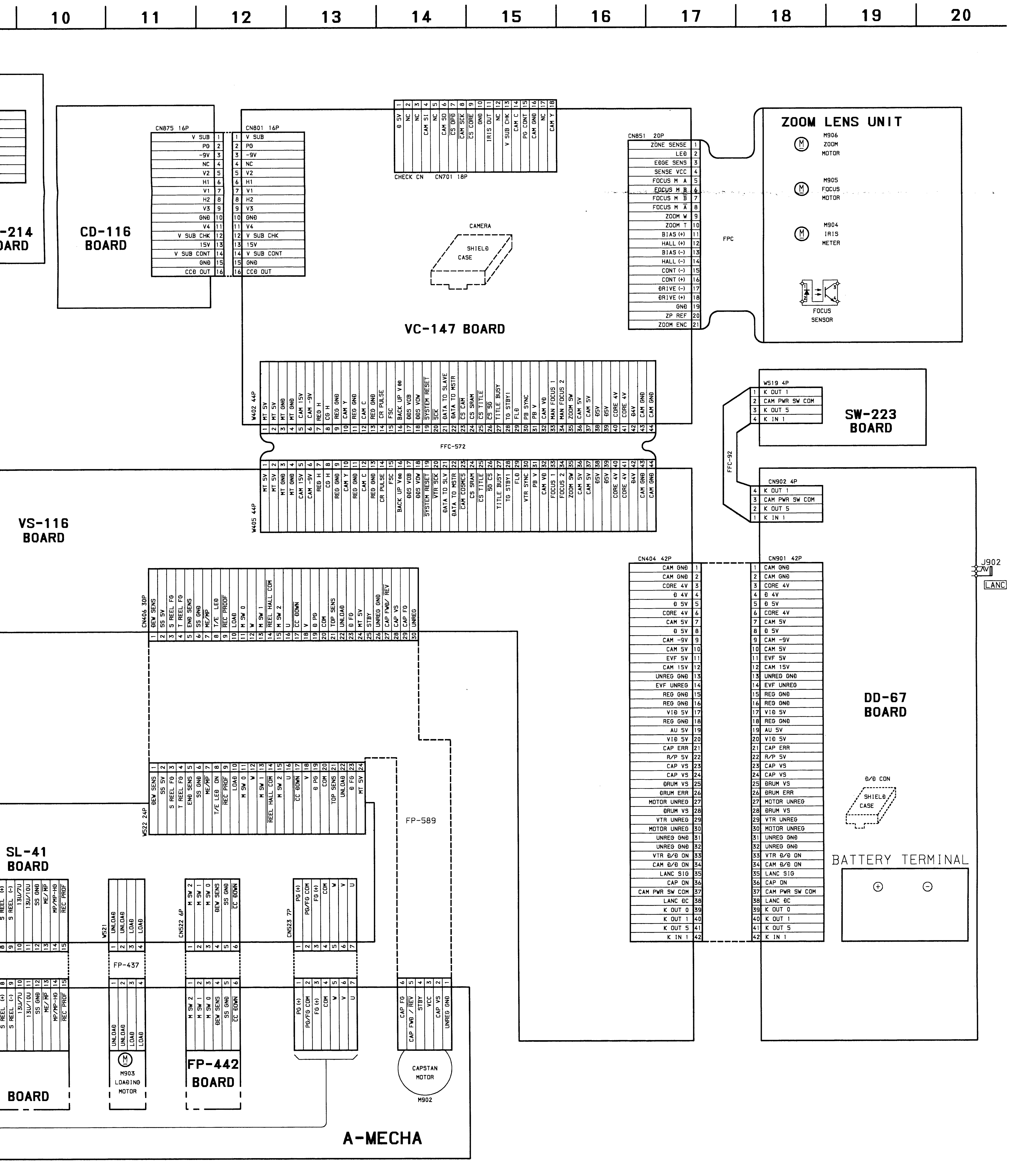
11
A
B
C
D
E
F
G
H
I
J
K
L
M
VK-32 BOARD
W987 13P
K OUT 1
K IN 5
CAM PWR SW COM
K OUT 0
K IN 4
K IN 3
N.C
N.C
N.C
K IN 1
K IN 2
K OUT 2
CHASSIS GND
FP-591
ED-37 BOARD
W987 13P
W986 13P
K OUT 0
K OUT 1
K OUT 2
K OUT 5
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
CAM PWR SW COM
CHASSIS GND
FP-590
CF-34 BOARD
W986 13P
W991 20P
FFC-86
CN993 8P
K OUT 0
K OUT 4
K IN 4
K IN 6
Ð5V
FOCUS 1
FOCUS 2
REG GND
FFC-87
W971 8P
MF-214 BOARD
CD-116 BOARD
CN875 16P
V SUB
PG
-9V
NC
V2
H1
V1
H2
V3
GND
V4
V SUB CHK
15V
V SUB CONT
GND
CCD OUT
CN-84 BOARD
CN518 20P
CN403 20P
VS-116 BOARD
V901
CRT
CN501 4P
EVF 5V
EVF GND
EVF OUT
TALLY
VF-42 BOARD
CN102 6P
EVF UNREG
UNREG GND
EVF 5V
EVF GND
EVF OUT
TALLY
J517
VIDEO OUT
RFU DC OUT
AUDIO OUT
JK-99 BOARD
W517
FFC-124
CN101 6P
VIDEO GND
VIDEO OUT
RF DC OUT
RF DC GND
AUDIO GND
AUDIO L OUT
CN407 2P
LI GND
LI 3V
CN516 2P
LI-46 BOARD
CN406 30P
DEW SENS
SS 5V
S REEL FG
T REEL FG
END SENS
SS GND
MC/MP
T/E LED
REC PROOF
W522 24P
CN002 5P
PB 'CH RF
PB PCM RF
PB RF
RF SWP
RP GND
J551
MIC
CN552 3P
INT MIC A
N.C
MIC A GND
ZOOM SWITCH UNIT
CN551 5P
MIC SIG
MIC 5V
AUDIO GND
AUDIO GND
CHASSIS GND
MA-206 BOARD
FFC
CN604 5P
ZOOM W
ZOOM FW
ZOOM T
ZOOM FT
SS GND
CN601 5P
SL-41 BOARD
CN521 15P
T/E LED ON
MT 5V
TOP SENS
END SENS
T REEL (+)
T REEL (-)
REEL HALL COM
S REEL (+)
S REEL (-)
13U/7U
13U/10U
SS GND
MC/MP
MP/MP-HG
REC PROOF
W521
UNLOAD
LOAD
FP-437
CN522 6P
M SW 2
M SW 1
M SW 0
DEW SENS
SS GND
CN602 20P
PB RF
REC AFM
1.5 IR
AUDIO FADER
1.5 DEV
AUDIO GND
AUDIO 5V
FSC
VA PB MODE
RF SWP
SP/LP
AUDIO MUTE
AUDIO L OUT
SS GND
SIRCS SIG
SS 5V
ZOOM SW
CN401 20P
R/P AMP SHIELD CASE
AU-171 BOARD
W001
1CH A (G)
1CH A (X)
1CH A (Y)
2CH A (G)
2CH A (Y)
2CH A (X)
NC
FE (G)
FE (Y)
FE (X)
GND
FP-588
CN001 11P
M901
DRUM MOTOR
LS-33 BOARD
M903
LOADING MOTOR
FP-442 BOARD
09



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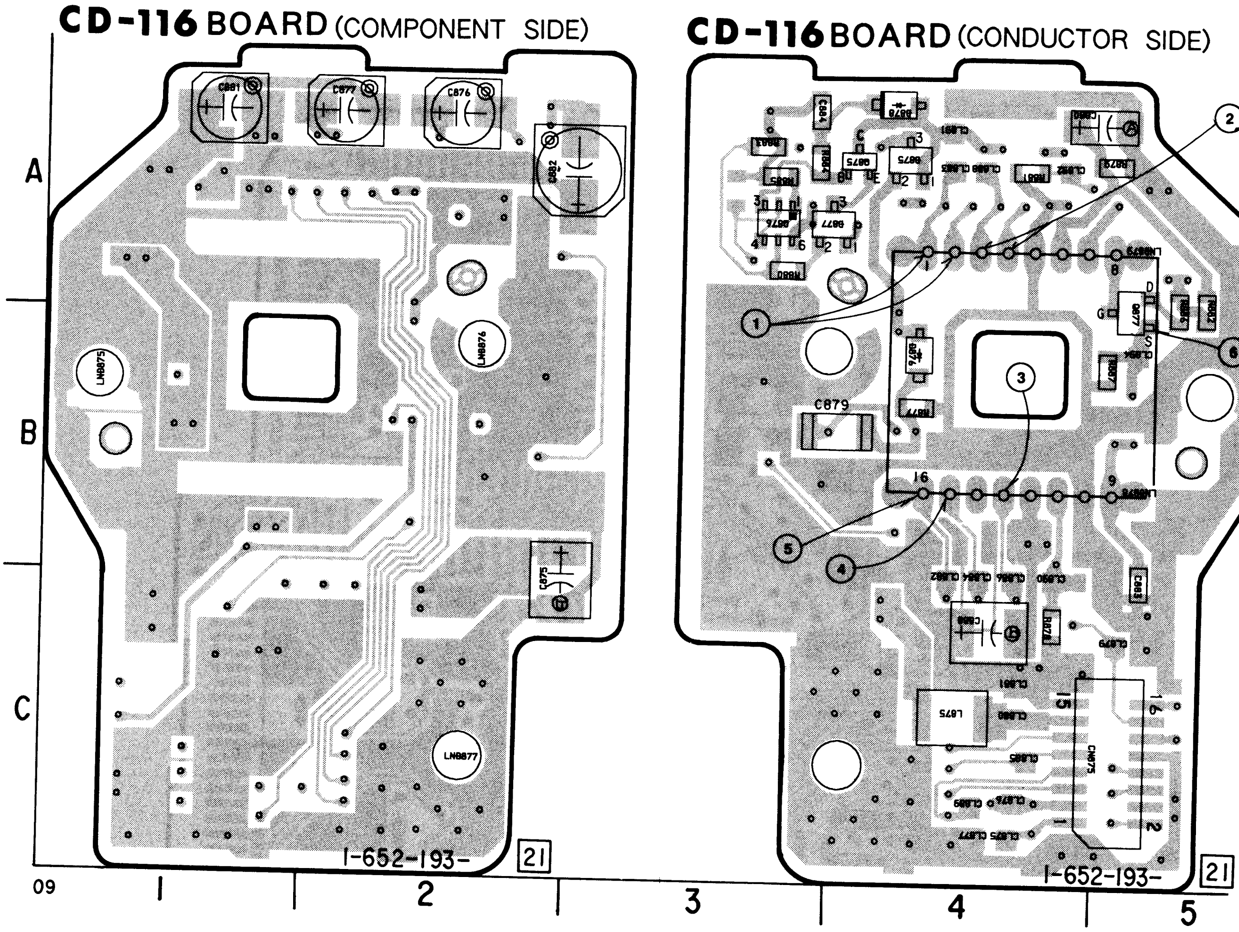
17
18
19
20
-214
OARD
CD-116
BOARD
CN875 16P
V SUB 1
PG 2
-9V 3
NC 4
V2 5
H1 6
V1 7
H2 8
V3 9
GND 10
V4 11
V SUB CHK 12
15V 13
V SUB CONT 14
GND 15
CCD OUT 16
CN801 16P
1 V SUB
2 PG
3 -9V
4 NC
5 V2
6 H1
7 V1
8 H2
9 V3
10 GND
11 V4
12 V SUB CHK
13 15V
14 V SUB CONT
15 GND
16 CCD OUT
CHECK CN
CN701 18P
D 5V 1
NC 2
NC 3
CAM SI 4
NC 5
CAM SO 6
CS DPD 7
CAM SCK 8
CS CORE 9
GND 10
IRIS OUT 11
NC 12
V SUB CHK 13
CAM C 14
PG CONT 15
CAM GND 16
NC 17
CAM Y 18
CAMERA
SHIELD
CASE
VC-147 BOARD
CN851 20P
ZONE SENSE 1
LED 2
EDGE SENS 3
SENSE VCC 4
FOCUS M A 5
FOCUS M B 6
FOCUS M B 7
FOCUS M A 8
ZOOM W 9
ZOOM T 10
BIAS (+) 11
HALL (+) 12
BIAS (-) 13
HALL (-) 14
CONT (-) 15
CONT (+) 16
DRIVE (-) 17
DRIVE (+) 18
GND 19
ZP REF 20
ZOOM ENC 21
FPC
ZOOM LENS UNIT
M906
ZOOM
MOTOR
M905
FOCUS
MOTOR
M904
IRIS
METER
FOCUS
SENSOR
W402 44P
1 MT 5V
2 MT 5V
3 MT GND
4 MT GND
5 CAM 15V
6 CAM -9V
7 REG H
8 CG H
9 REG GND
10 CAM Y
11 REG GND
12 CAM C
13 REG GND
14 CR PULSE
15 FSC
16 BACK UP V DD
17 DDS VDD
18 DDS VDW
19 SYSTEM RESET
20 SCK
21 DATA TO SLAVE
22 DATA TO MSTR
23 CS CAM
24 CS SRAM
25 CS TITLE
26 CS SG
27 TITLE BUSY
28 TG STBY1
29 FLD
30 PB SYNC
31 PB V
32 CAM VD
33 MAN FOCUS 1
34 MAN FOCUS 2
35 ZOOM SW
36 CAM 5V
37 CAM 5V
38 D5V
39 D5V
40 CORE 4V
41 CORE 4V
42 D4V
43 CAM GND
44 CAM GND
FFC-572
W405 44P
1 MT 5V
2 MT 5V
3 MT GND
4 MT GND
5 CAM 15V
6 CAM -9V
7 REG H
8 CG H
9 REG GND
10 CAM Y
11 REG GND
12 CAM C
13 REG GND
14 CR PULSE
15 FSC
16 BACK UP V DD
17 DDS VDD
18 DDS VDW
19 SYSTEM RESET
20 VTR SCK
21 DATA TO SLV
22 DATA TO MSTR
23 CAM COSMCS
24 CS SRAM
25 CS TITLE
26 SG CS
27 TITLE BUSY
28 TG STBY1
29 FLD
30 VTR SYNC
31 PB V
32 CAM VD
33 FOCUS 1
34 FOCUS 2
35 ZOOM SW
36 CAM 5V
37 CAM 5V
38 D5V
39 D5V
40 CORE 4V
41 CORE 4V
42 D4V
43 CAM GND
44 CAM GND
VS-116
BOARD
W519 4P
1 K OUT 1
2 CAM PWR SW COM
3 K OUT 5
4 K IN 1
SW-223
BOARD
FFC-92
CN902 4P
4 K OUT 1
3 CAM PWR SW COM
2 K OUT 5
1 K IN 1
J902
AV
LANC
CN406 30P
1 BEW SENS
2 SS 5V
3 S REEL FG
4 T REEL FG
5 END SENS
6 SS GND
7 ME/MP
8 T/E LED
9 REC PROOF
10 LOAD
11 M SW 0
12 W
13 M SW 1
14 REEL HALL COM
15 M SW 2
16 U
17 CC DOWN
18 V
19 D PG
20 COM
21 TOP SENS
22 UNLOAD
23 D FG
24 MT 5V
25 STBY
26 UNREG GND
27 CAP FWD/REV
28 CAP VS
29 CAP FG
30 UNREG
CN404 42P
CAM GND 1
CAM GND 2
CORE 4V 3
D 4V 4
D 5V 5
CORE 4V 6
CAM 5V 7
D 5V 8
CAM -9V 9
CAM 5V 10
EVF 5V 11
CAM 15V 12
UNREG GND 13
EVF UNREG 14
REG GND 15
REG GND 16
VID 5V 17
REG GND 18
AU 5V 19
VID 5V 20
CAP ERR 21
R/P 5V 22
CAP VS 23
CAP VS 24
DRUM VS 25
DRUM ERR 26
MOTOR UNREG 27
DRUM VS 28
VTR UNREG 29
MOTOR UNREG 30
UNREG GND 31
UNREG GND 32
VTR D/D ON 33
CAM D/D ON 34
LANC SIG 35
CAP ON 36
CAM PWR SW COM 37
LANC DC 38
K OUT 0 39
K OUT 1 40
K OUT 5 41
K IN 1 42
CN901 42P
1 CAM GND
2 CAM GND
3 CORE 4V
4 D 4V
5 D 5V
6 CORE 4V
7 CAM 5V
8 D 5V
9 CAM -9V
10 CAM 5V
11 EVF 5V
12 CAM 15V
13 UNREG GND
14 EVF UNREG
15 REG GND
16 REG GND
17 VID 5V
18 REG GND
19 AU 5V
20 VID 5V
21 CAP ERR
22 R/P 5V
23 CAP VS
24 CAP VS
25 DRUM VS
26 DRUM ERR
27 MOTOR UNREG
28 DRUM VS
29 VTR UNREG
30 MOTOR UNREG
31 UNREG GND
32 UNREG GND
33 VTR D/D ON
34 CAM D/D ON
35 LANC SIG
36 CAP ON
37 CAM PWR SW COM
38 LANC DC
39 K OUT 0
40 K OUT 1
41 K OUT 5
42 K IN 1
DD-67
BOARD
D/D CON
SHIELD
CASE
BATTERY TERMINAL
+
-
W522 24P
1 BEW SENS
2 SS 5V
3 S REEL FG
4 T REEL FG
5 END SENS
6 SS GND
7 ME/MP
8 T/E LED ON
9 REC PROOF
10 LOAD
11 M SW 0
12 W
13 M SW 1
14 REEL HALL COM
15 M SW 2
16 U
17 CC DOWN
18 V
19 D PG
20 COM
21 TOP SENS
22 UNLOAD
23 D FG
24 MT 5V
FP-589
SL-41
BOARD
S REEL (+)
S REEL (-)
T3U/7U
T3U/DU
SS GND
ME/MP
MP/MP-HG
REC PROOF
W521
UNLOAD
UNLOAD
LOAD
LOAD
FP-437
CN522 6P
M SW 2
M SW 1
M SW 0
BEW SENS
SS GND
CC DOWN
CN523 7P
PG (+)
PG/FG COM
FG (+)
COM
W
V
U
FP-442
BOARD
M903
LOADING
MOTOR
CAP FG
CAP FWD / REV
STBY
VCC
CAP VS
UNREG GND
CAPSTAN
MOTOR
M902
BOARD
A-MECHA

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

CD-116 (CCD IMAGER) PRINTED WIRING BOARD

— Ref. No. CD-116 BOARD: 1000 series —


CD-116 BOARD (COMPONENT SIDE)
CD-116 BOARD (CONDUCTOR SIDE)
A
B
C
09
1
2
3
4
5
C881
C877
C876
C882
LN8875
LN8876
LN8877
C875
1-652-193-
21
C884
D878
C880
R881
R883
Q875
Q876
Q877
R880
C879
R886
C883
C889
L875
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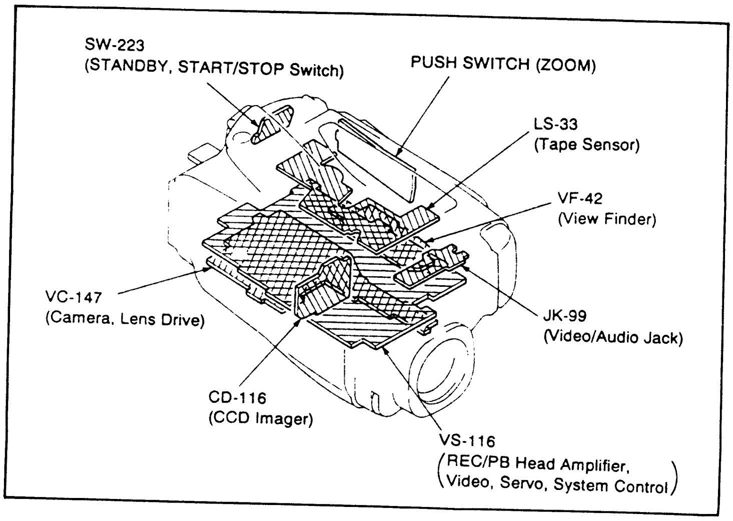
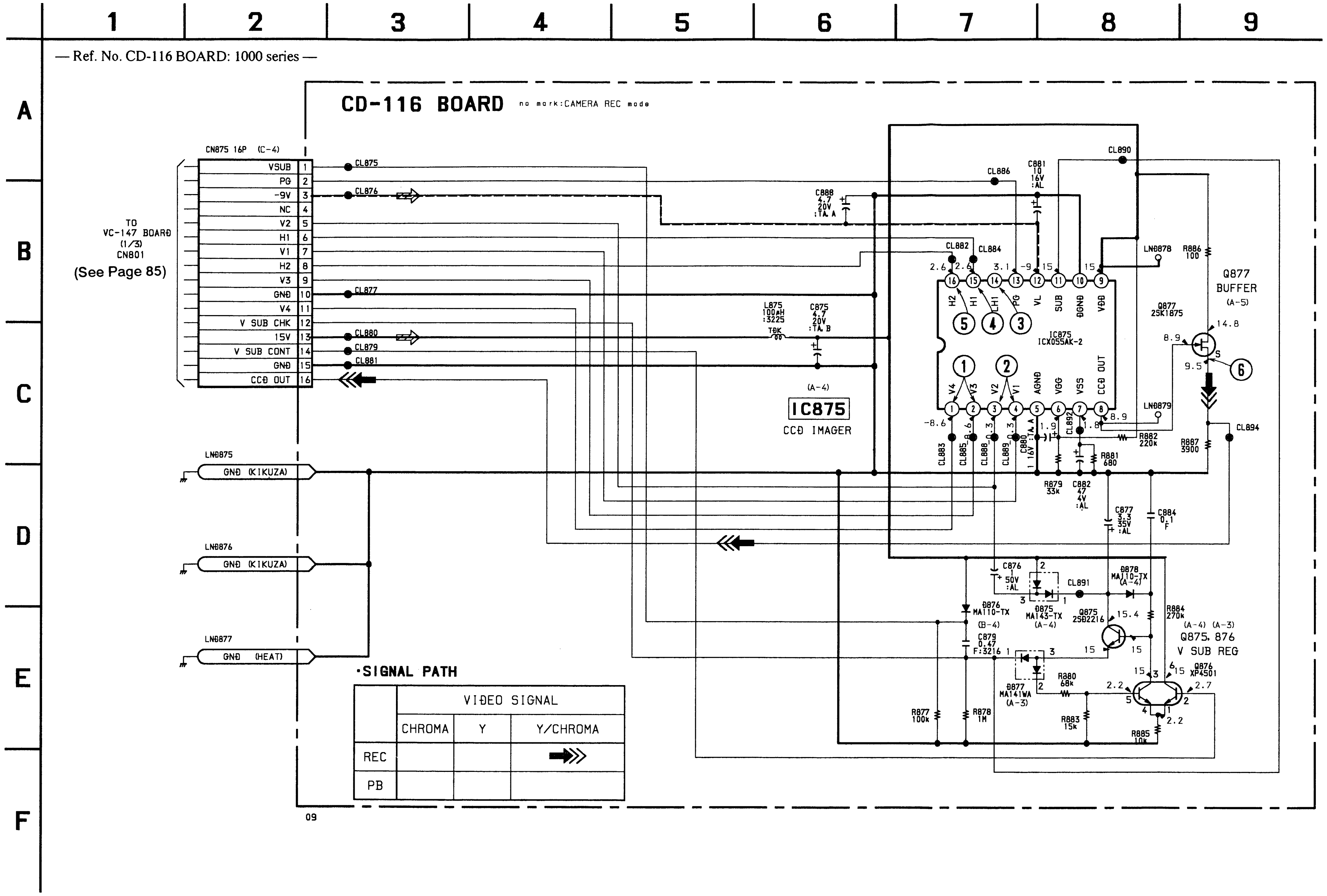
G
D
S
1-652-193-
21


SW-223
(STANDBY, START/STOP Switch)
PUSH SWITCH (ZOOM)
LS-33
(Tape Sensor)
VF-42
(View Finder)
VC-147
(Camera, Lens Drive)
JK-99
(Video/Audio Jack)
CD-116
(CCD Imager)
VS-116
(REC/PB Head Amplifier, Video, Servo, System Control)

CD-116 (CCD IMAGER) SCHEMATIC DIAGRAM

— Ref. No. CD-116 BOARD: 1000 series —



1
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7
8
9
A
B
C
D
E
F
CD-116 BOARD
no mark:CAMERA REC mode
CN875 16P (C-4)
VSUB 1
PG 2
-9V 3
NC 4
V2 5
H1 6
V1 7
H2 8
V3 9
GND 10
V4 11
V SUB CHK 12
15V 13
V SUB CONT 14
GND 15
CCD OUT 16
TO VC-147 BOARD (1/3) CN801
(See Page 85)
CL875
CL876
CL877
CL880
CL879
CL881
LN8875 GND (KIKUZA)
LN8876 GND (KIKUZA)
LN8877 GND (HEAT)
C888 4.7 20V :TA A
L875 100µH :3225
C875 4.7 20V :TA B
(A-4)
IC875
CCD IMAGER
IC875 ICX055AK-2
H2 H1 LH1 PG VL SUB GND VDD
V4 V3 V2 V1 AGND VGG VSS CCD OUT
CL882 CL884 CL886 CL890
C881 10 16V :AL
LN8878 R886 100
Q877 BUFFER (A-5)
Q877 2SK1875
14.8 8.9 9.5
LN8879
R882 220k
R887 3900
CL894
CL883 CL885 CL888 CL889 C880 1 16V
R881 680
R879 33k
C882 47 4V :AL
C877 3.3 35V :AL
C884 0.1 F
C876 2 50V :AL
CL891
Q878 MA110-TX (A-4)
Q876 MA110-TX (B-4)
Q875 MA143-TX (A-4)
Q875 2SB2216
R884 270k
(A-4) (A-3)
Q875, 876 V SUB REG
C879 0.47 F:3216
Q876 XP4501
R880 68k
Q877 MA141WA (A-3)
R877 100k
R878 1M
R883 15k
R885 10k
09

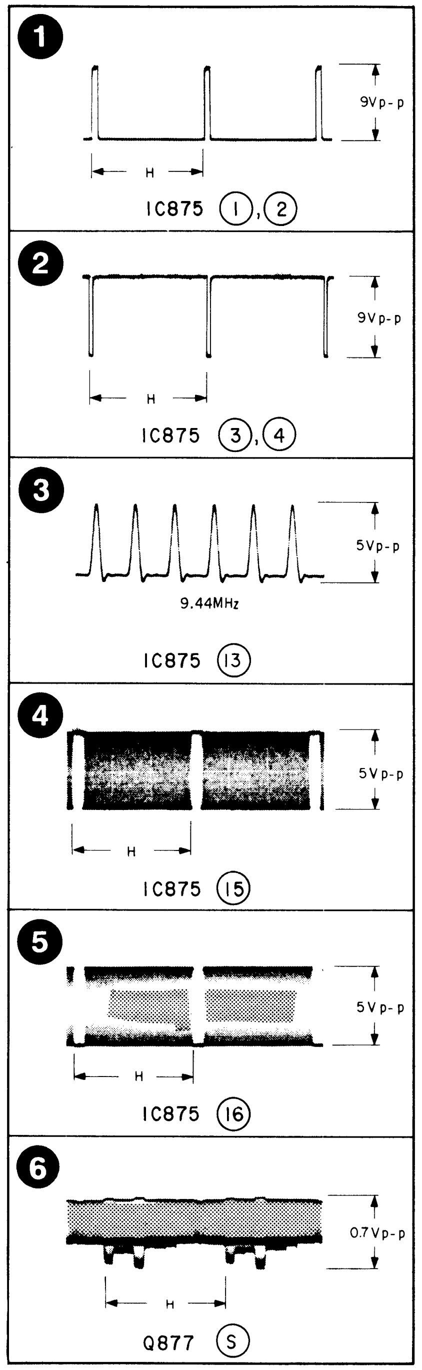
·SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡》
PB			

Note on the CCD imager replacement

- Some of this units require the correction data by the CCD imager (IC875 on CD-116 board), some do not.
  The correction data is input in F page and addresses 1D to 2C of the camera micro processor (IC709 on VC-147 board), and also written on the CCD data label put on the shield case (upper) of the DD-67 board.
  The correction data is not required for the CCD imager supplied for repair. Therefore, when replacing the CCD imager to which the CCD data label is put, remove the CCD data label and input 00 to F page and addresses 1D to 2C of the camera micro processor. Refer to the camera adjustment for input method.
- The CCD imager is not mounted for the already mounted CD-116 board supplied as the repair parts.
  When replacing the CD-116 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

CD-116 BOARD



THIS NOTE IS
(In addition to th

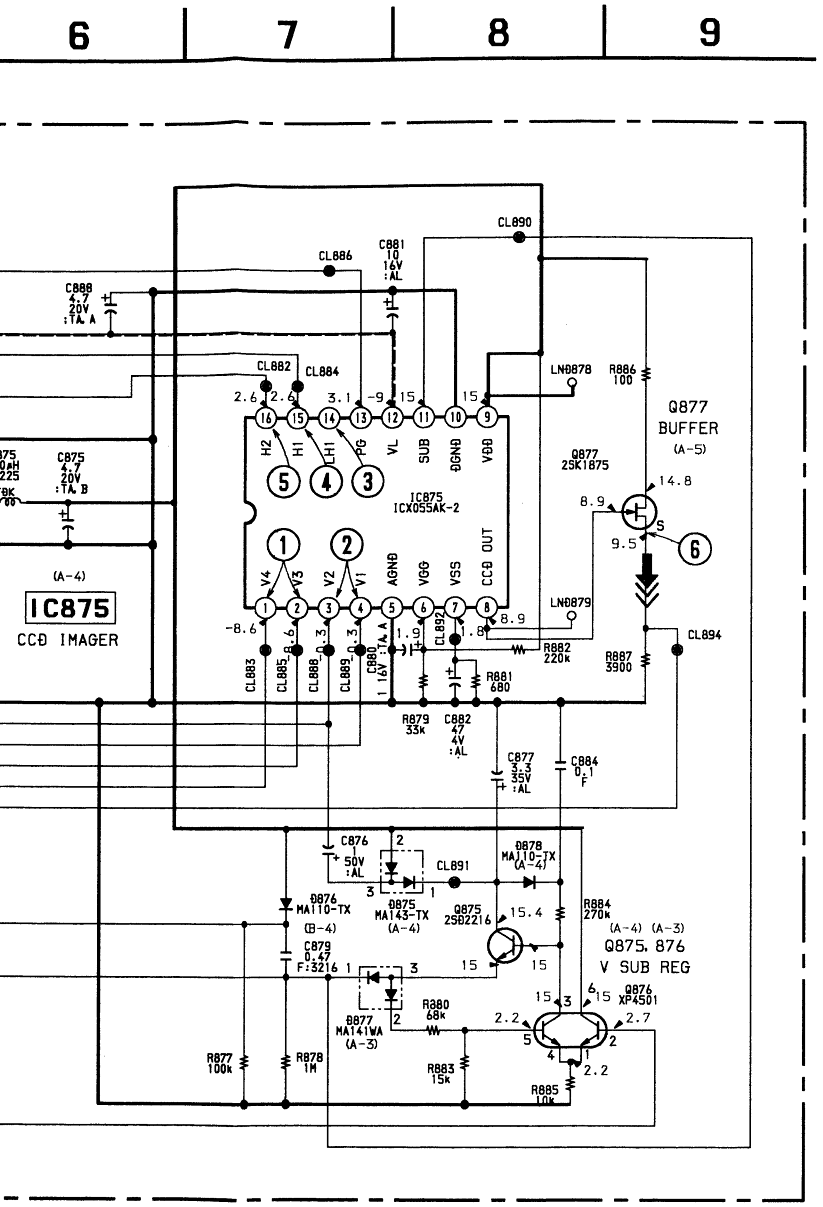
- **For printed wi**
- ○— : indicated
- —— : indicated
- ■ : Parts mo
- ▨ : Pattern fr
  which en
(The other layers
- Circled numbers
- ○ or ● : Throug

Caution:
Pattern face side:
(Conductor Side)
Parts face side:
(Component side)

- **For schematic**
- Caution when re
  New parts must b
  Be careful not t
  because it is dam
- All resistors are i
  Chip resistor are
  kΩ : 1000Ω , MΩ
- All capacitors are
  50V or less ar
  tantalums.
- All variable and a
  unless otherwise
- ▭ : nonflamm
- ▭ : fusibl
- ▭ : panel de
- △ : internal c
- ▭ : adjustme
- ━━ : B+ Line.
- ‒ ‒ ‒ : B– Line.
- ➡ : IN/OUT
- Circled numbers

Note:
The components
mark ⚠ are critica
Replace only with

When indicating
ence number, ple
board name.

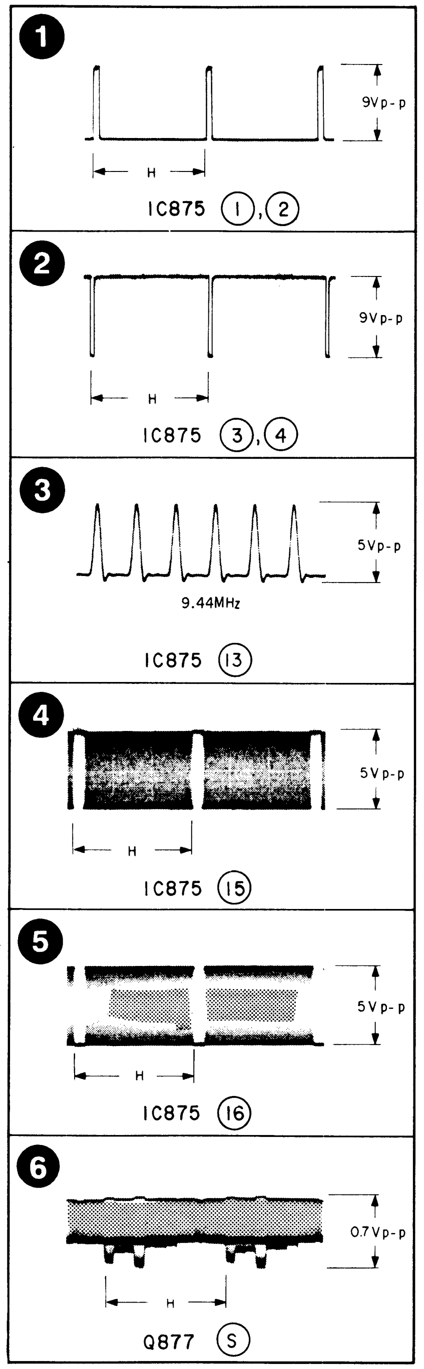

6
7
8
9
CL890
CL886
C881 10 16V :AL
C888 4.7 20V :TA A
CL882
CL884
LN8878
R886 100
Q877 BUFFER (A-5)
Q877 2SK1875
C875 4.7 20V :TA B
IC875 ICX055AK-2
(A-4)
IC875
CCD IMAGER
H2 H1 LH1 PG VL SUB GGND VGG
V4 V3 V2 V1 AGND VGG VSS CCD OUT
LN8879
CL894
R882 220k
R887 3900
R881 680
R879 33k
C882 47 4V :AL
C877 3.3 35V :AL
C884 0.1 F
C876 1 50V :AL
CL891
Q878 MA110-TX (A-4)
D876 MA110-TX (B-4)
D875 MA143-TX (A-4)
Q875 2SB2216
R884 270k
(A-4) (A-3)
Q875, 876
V SUB REG
C879 0.47 F:3216
D877 MA141WA (A-3)
R880 68k
Q876 XP4501
R883 15k
R885 10k
R877 100k
R878 1M
CL883 CL885 CL888 CL889 C880 CL892

data by the CCD
not.
ddresses 1D to 2C
C-147 board), and
n the shield case

the CCD imager
placing the CCD
remove the CCD
esses 1D to 2C of
amera adjustment

- The CCD imager is not mounted for the already mounted CD-116 board supplied as the repair parts.
  When replacing the CD-116 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

CD-116 BOARD



THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- —— : indicated a lead wire mounted on the conductor side.
- ■ : Parts mounted on the conductor side.
- ▨ : Pattern from the side which enables seeing.
  (The other layers'patterns are not indicated.)
- Circled numbers refer to waveforms.
- ○ or ● : Through hole.

Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

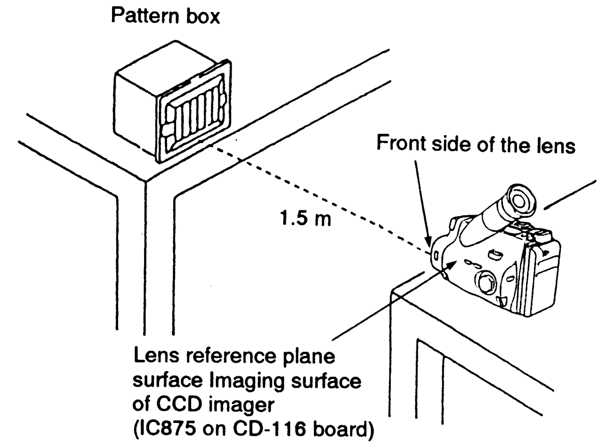
- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W or less unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊟ : nonflammable resistor.
- ⊟ : fusible resistor.
- ☐ : panel designation.
- △ : internal component.
- ☐ : adjustment for repeair.
- ━ : B+ Line.
- ╍ : B– Line.
- ⇨ : IN/OUT direction of (+, –) B LINE.
- Circled numbers refer to waveforms.

Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

When indicating parts by refer- ence number, please include the board name.

- **Measuring conditions voltage value and waveform. (CAMERA REC mode)**
- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

1. Connection


Pattern box
Front side of the lens
1.5 m
Lens reference plane
surface Imaging surface
of CCD imager
(IC875 on CD-116 board)

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

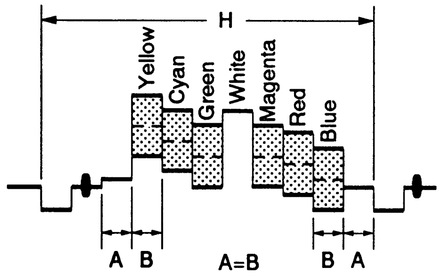


Fig. a (Video output terminal output waveform)

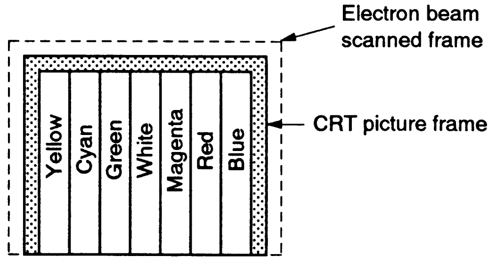

Electron beam scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. b (Picture on monitor TV)

(REC/PB mode)

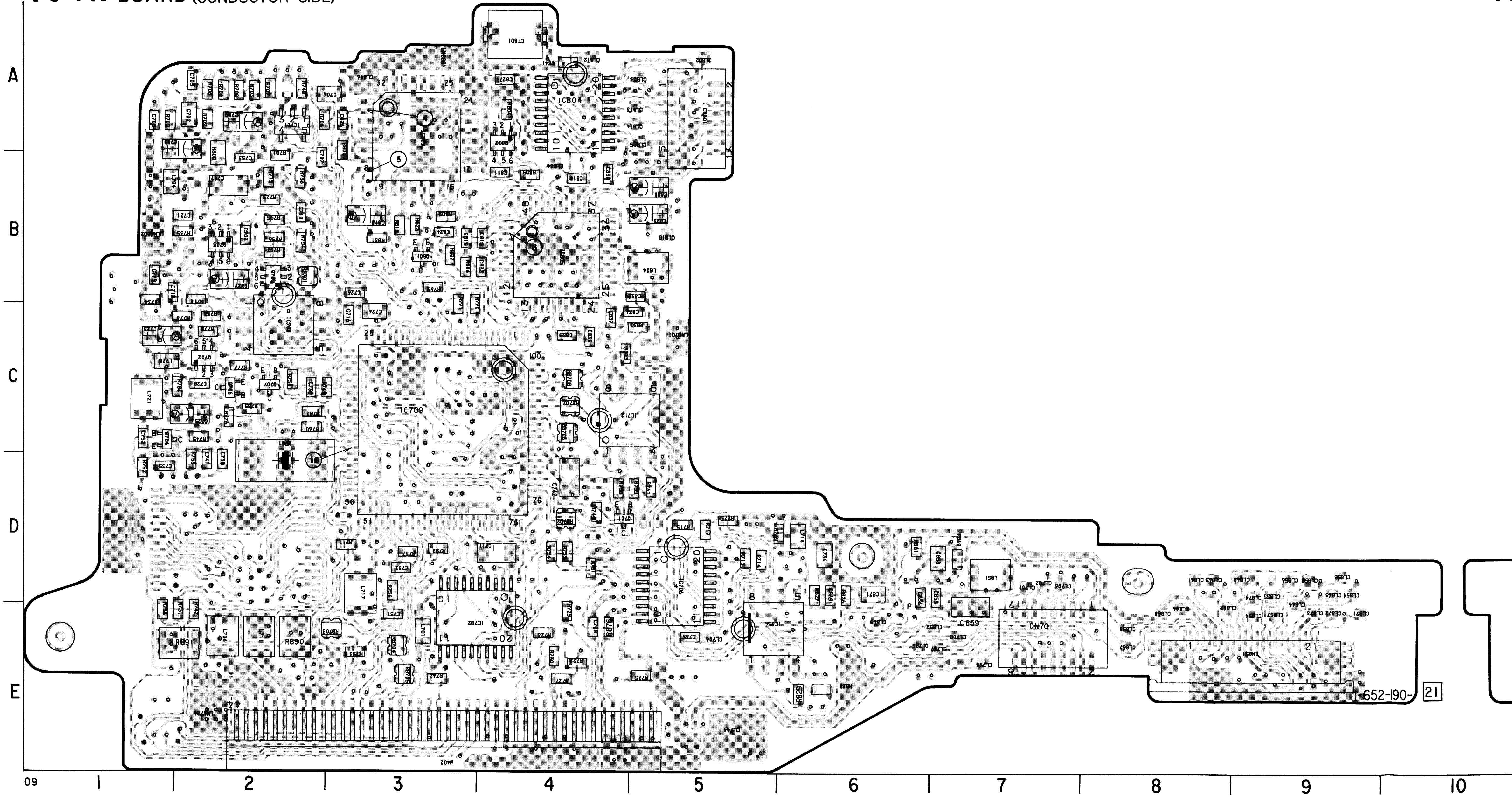
- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

Note: Refer to "9-1-3. How to set the REC Mode" in VIDEO SECTION ADJUSTMENT. (See Page 205)

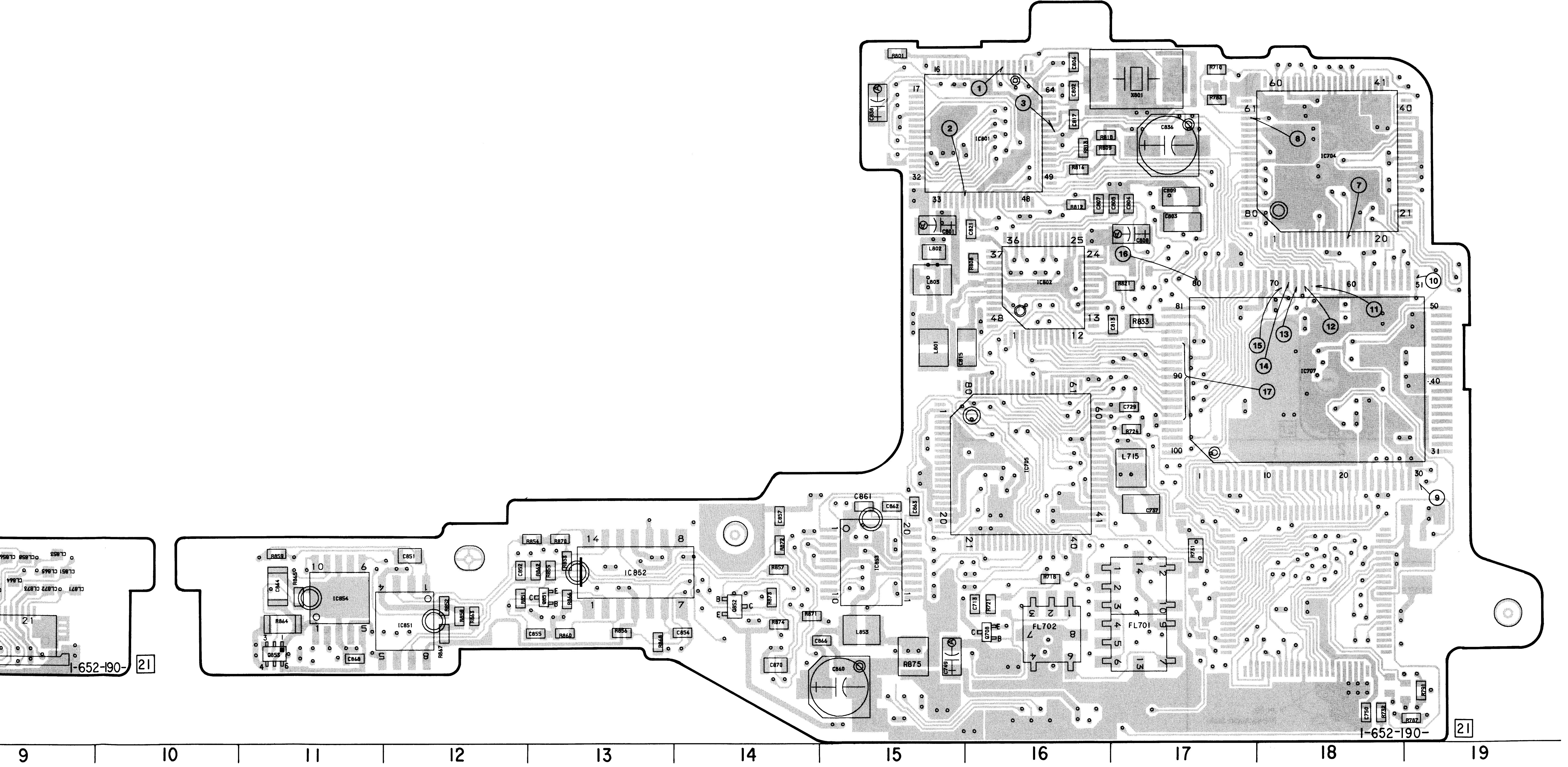
VC-147 (CAMERA, LENS DRIVE) PRINTED WIRING BOARD

— Ref. No. VC-147 BOARD: 3000 series —

VC-147 BOARD (CONDUCTOR SIDE)

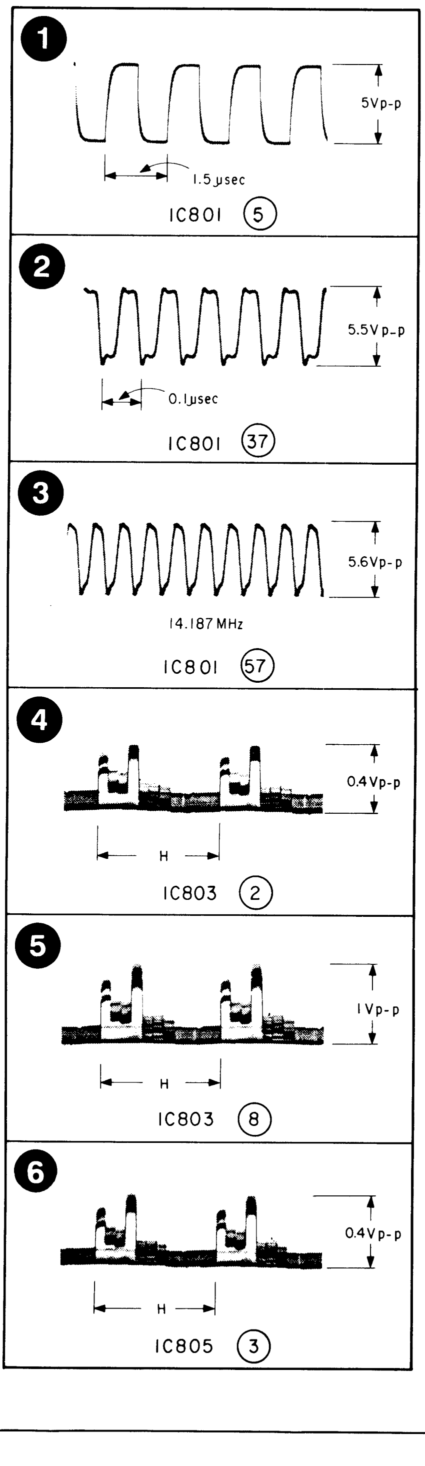

A
B
C
D
E
09
1
2
3
4
5
6
7
8
9
10
CT801
IC804
IC803
IC801
IC709
IC712
IC702
IC705
IC706
IC851
CN801
CN701
CN851
L721
L717
R891
R890
C859
X701
LND801
1-652-190-21

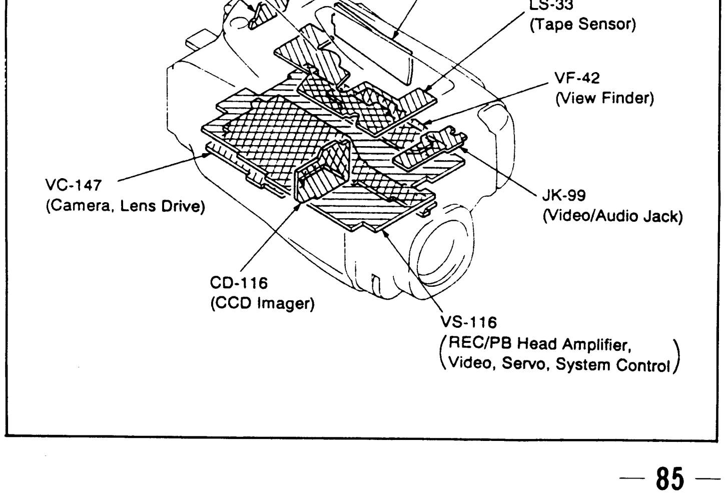
VC-147 BOARD (COMPONENT SIDE)



IC601
IC602
IC704
IC705
IC707
IC851
IC852
IC853
IC854
X801
C836
C860
C861
L715
FL701
FL702
R833
R875
L853
Q852
Q853
1-652-190-
21
9
10
11
12
13
14
15
16
17
18
19

VC-147 BOARD (1/3)

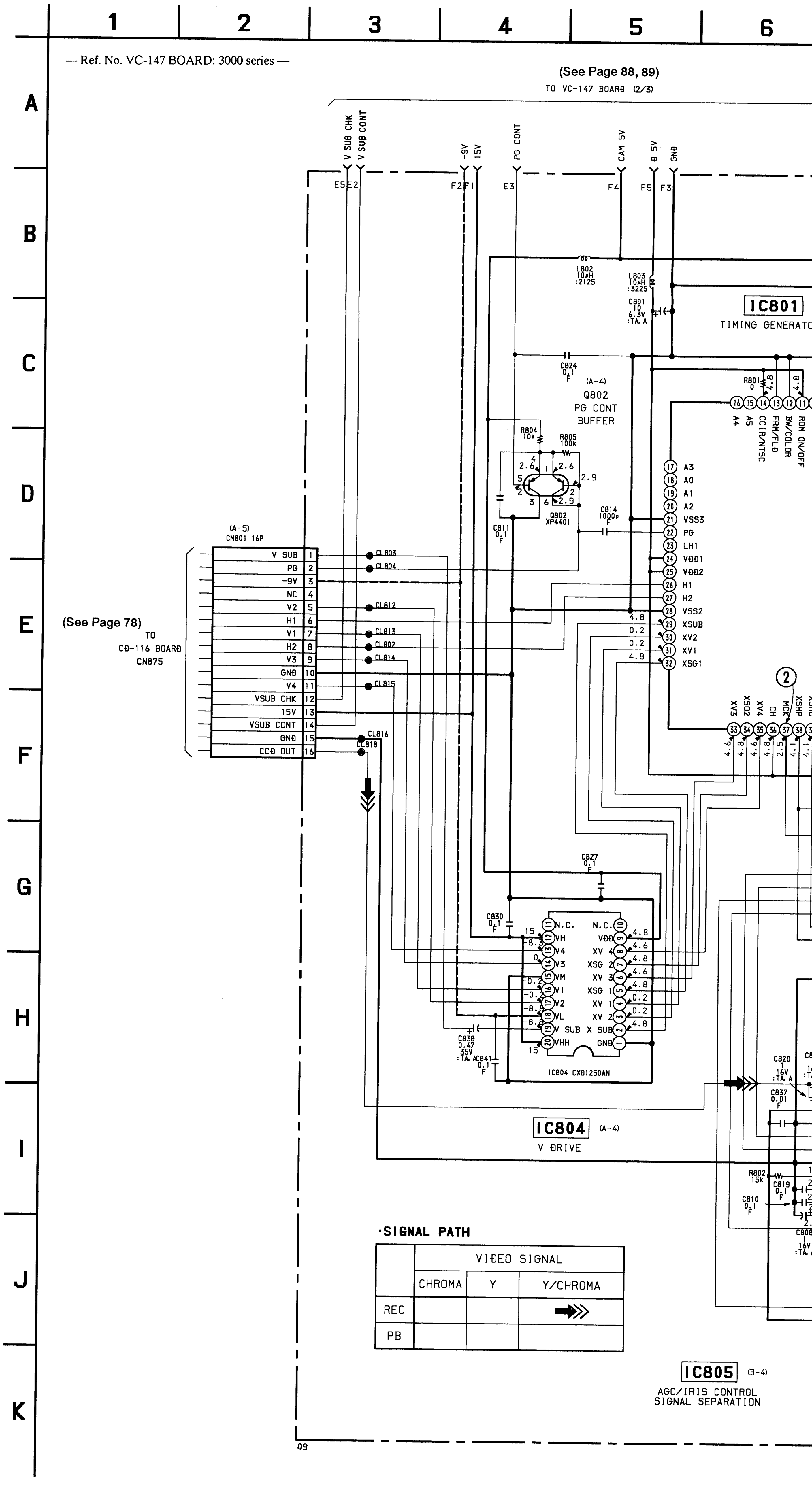




SW-223
(STANDBY, START/STOP Switch)
PUSH SWITCH (ZOOM)
LS-33
(Tape Sensor)
VF-42
(View Finder)
VC-147
(Camera, Lens Drive)
JK-99
(Video/Audio Jack)
CD-116
(CCD Imager)
VS-116
(REC/PB Head Amplifier, Video, Servo, System Control)

VC-147 (CAMERA) SCHEMATIC DIAGRAM

— Ref. No. VC-147 BOARD: 3000 series —



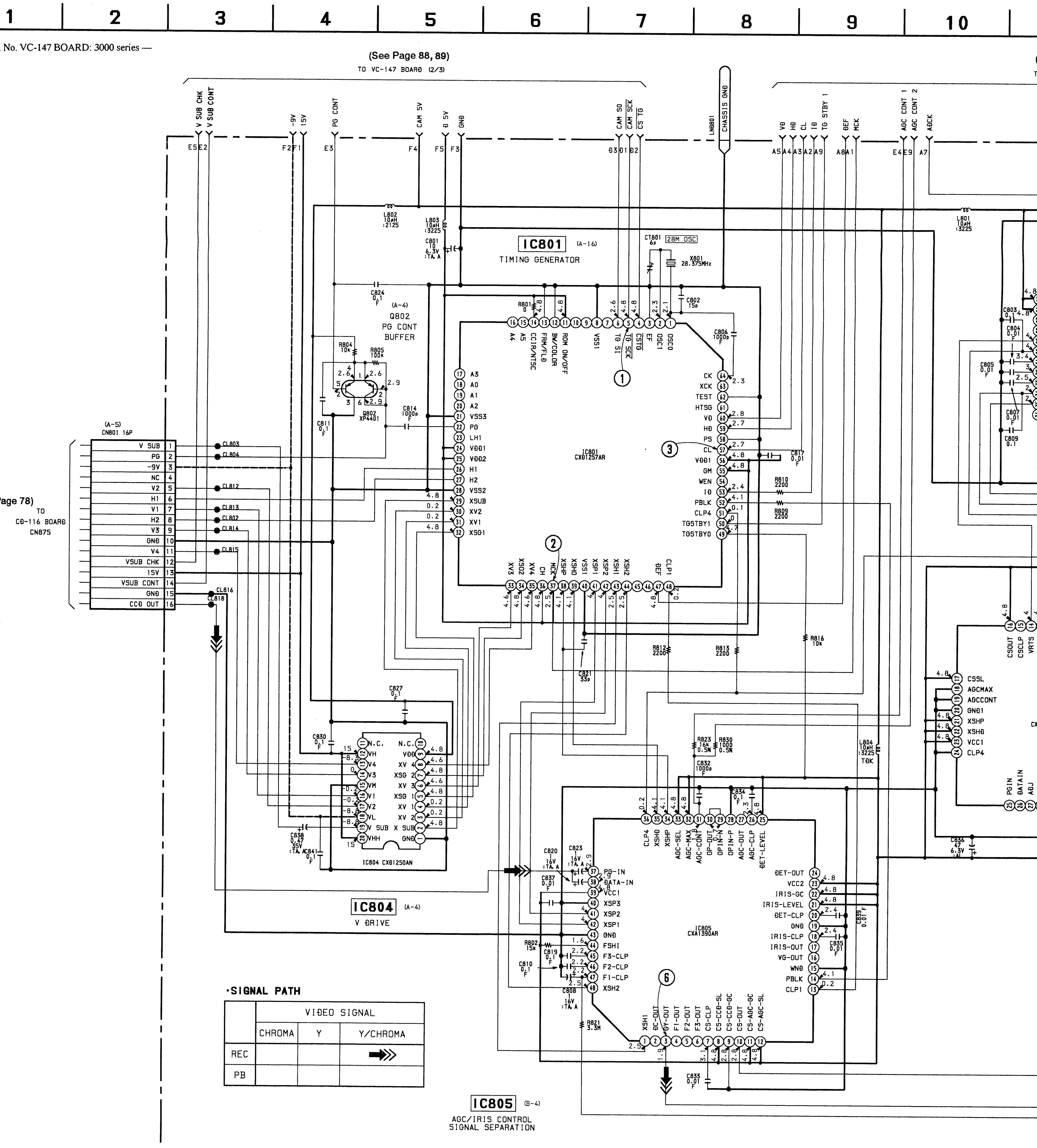
1
2
3
4
5
6
A
B
C
D
E
F
G
H
I
J
K
(See Page 88, 89)
TO VC-147 BOARD (2/3)
V SUB CHK
V SUB CONT
-9V
15V
PG CONT
CAM 5V
D 5V
GND
E5
E2
F2
F1
E3
F4
F5
F3
L802 10µH :2125
L803 10µH :3225
C801 10 6.3V :TA A
IC801
TIMING GENERATOR
C824 0.1 F
(A-4)
Q802
PG CONT
BUFFER
R804 10k
R805 100k
Q802 XP4401
C811 0.1 F
C814 1000p F
R801 0
A4
A5
CCIR/NTSC
FRM/FLD
BW/COLOR
ROM ON/OFF
A3
A0
A1
A2
VSS3
PG
LH1
VDD1
VDD2
H1
H2
VSS2
XSUB
XV2
XV1
XSG1
XV3
XSG2
XV4
CH
MCK
XSHP
(A-5)
CN801 16P
V SUB
PG
-9V
NC
V2
H1
V1
H2
V3
GND
V4
VSUB CHK
15V
VSUB CONT
GND
CCD OUT
CL803
CL804
CL812
CL813
CL802
CL814
CL815
CL816
CL818
(See Page 78)
TO
CD-116 BOARD
CN875
C827 0.1 F
C830 0.1 F
C838 0.47 35V :TA A
C841 0.1 F
N.C.
VH
V4
V3
VM
V1
V2
V SUB
VHH
VDD
XV 4
XSG 2
XV 3
XSG 1
XV 1
XV 2
X SUB
GND
IC804 CXD1250AN
IC804
(A-4)
V DRIVE
C820 16V :TA A
C837 0.01 F
R802 15k
C819 0.1 F
C810 0.1 F
C808 16V :TA A
IC805
(B-4)
AGC/IRIS CONTROL
SIGNAL SEPARATION
09

·SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡》
PB			

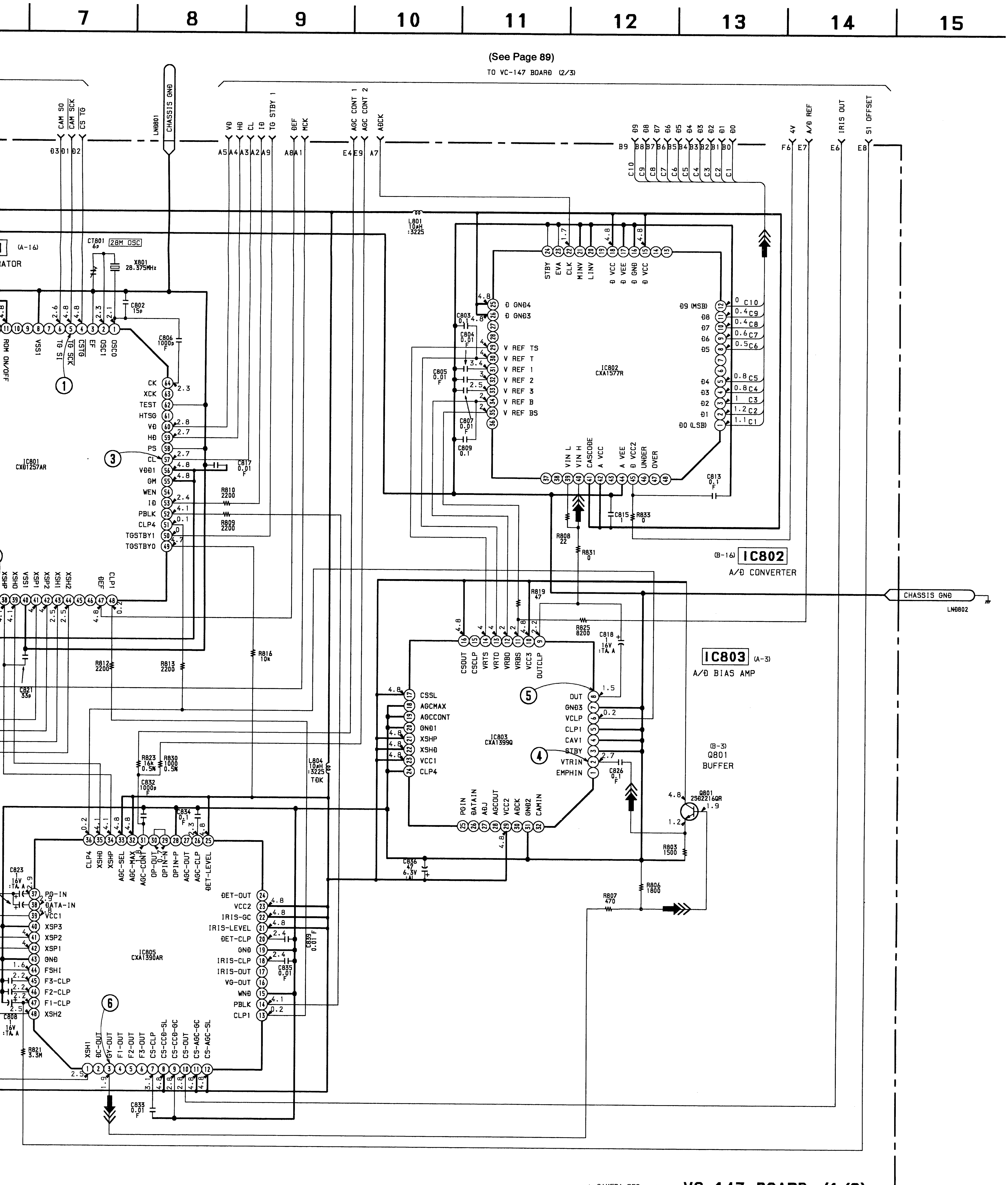
(CAMERA) SCHEMATIC DIAGRAM

No. VC-147 BOARD: 3000 series —


1
2
3
4
5
6
7
8
9
10
(See Page 88, 89)
TO VC-147 BOARD (2/3)
V SUB CHK
V SUB CONT
-9V
15V
PG CONT
CAM 5V
D 5V
GND
CAM SO
CAM SCK
CS TG
LND801
CHASSIS GND
VD
HD
CL
ID
TG STBY 1
DEF
MCK
AGC CONT 1
AGC CONT 2
ADCK
L802 10μH :2125
L803 10μH :3225
C801 10 6.3V :TA A
IC801 (A-16)
TIMING GENERATOR
CT801 6p
28M OSC
X801 28.375MHz
C802 15p
C806 1000p F
C824 0.1 F
(A-4) Q802 PG CONT BUFFER
R804 10k
R805 100k
Q802 XP4401
C814 1000p F
C811 0.1 F
IC801 CXD1257AR
A3 A0 A1 A2 VSS3 PG LH1 VDD1 VDD2 H1 H2 VSS2 XSUB XV2 XV1 XSG1
CK XCK TEST HTSG VD HD PS CL VDD1 GM WEN ID PBLK CLP4 TGSTBY1 TGSTBY0
A4 A5 CCIR/NTSC FRM/FLD BW/COLOR ROM ON/OFF VSS1 TG SI TG SCK CSTG EF OSC1 OSCO
XV3 XSG2 XV4 CH MCK XSHP XSHD VSS1 XSP1 XSP2 XSH1 XSH2 DEF CLP1
R801 0
C817 0.01 F
R810 2200
R809 2200
R812 2200
R813 2200
R816 10k
C821 33p
(A-5) CN801 16P
V SUB
PG
-9V
NC
V2
H1
V1
H2
V3
GND
V4
VSUB CHK
15V
VSUB CONT
GND
CCD OUT
(See Page 78) TO CD-116 BOARD CN875
CL803 CL804 CL812 CL813 CL802 CL814 CL815 CL816 CL818
C827 0.1 F
C830 0.1 F
N.C. VH V4 V3 VM V1 V2 VL V SUB VHH N.C. VDD XV XSG XV XSG XV XV X SUB GND
IC804 CXD1250AN
C838 0.47 35V :TA A
C841 0.1 F
IC804 (A-4)
V DRIVE
R823 16k 0.5%
R830 1000 0.5%
C832 1000p F
C834 0.1 F
L804 10μH :3225 TOK
CLP4 XSHD XSHP AGC-SEL AGC-MAX AGC-CONT OP-OUT OPIN-N OPIN-P AGC-OUT AGC-CLP DET-LEVEL
PG-IN DATA-IN VCC1 XSP3 XSP2 XSP1 GND FSHI F3-CLP F2-CLP F1-CLP XSH2
DET-OUT VCC2 IRIS-GC IRIS-LEVEL DET-CLP GND IRIS-CLP IRIS-OUT VG-OUT WND PBLK CLP1
XSH1 DC-OUT GY-OUT F1-OUT F2-OUT F3-OUT CS-CLP CS-CCD-SL CS-CCD-GC CS-OUT CS-AGC-GC CS-AGC-SL
IC805 CXA1390AR
C820 16V :TA A
C823 16V :TA A
C837 0.01 F
R802 15k
C819 0.1 F
C810 0.1 F
C808 16V :TA A
R821 3.3M
C839 0.01 F
C835 0.01 F
C833 0.01 F
IC805 (B-4)
AGC/IRIS CONTROL SIGNAL SEPARATION
L801 10μH :3225
C803 C804 0.01 C805 0.01 C807 0.01 C809 0.1
CSSL AGCMAX AGCCONT GND1 XSHP XSHD VCC1 CLP4
CSOUT CSCLP VRTS
PGIN DATAIN ADJ
C836 47 6.3V
09

·SIGNAL PATH

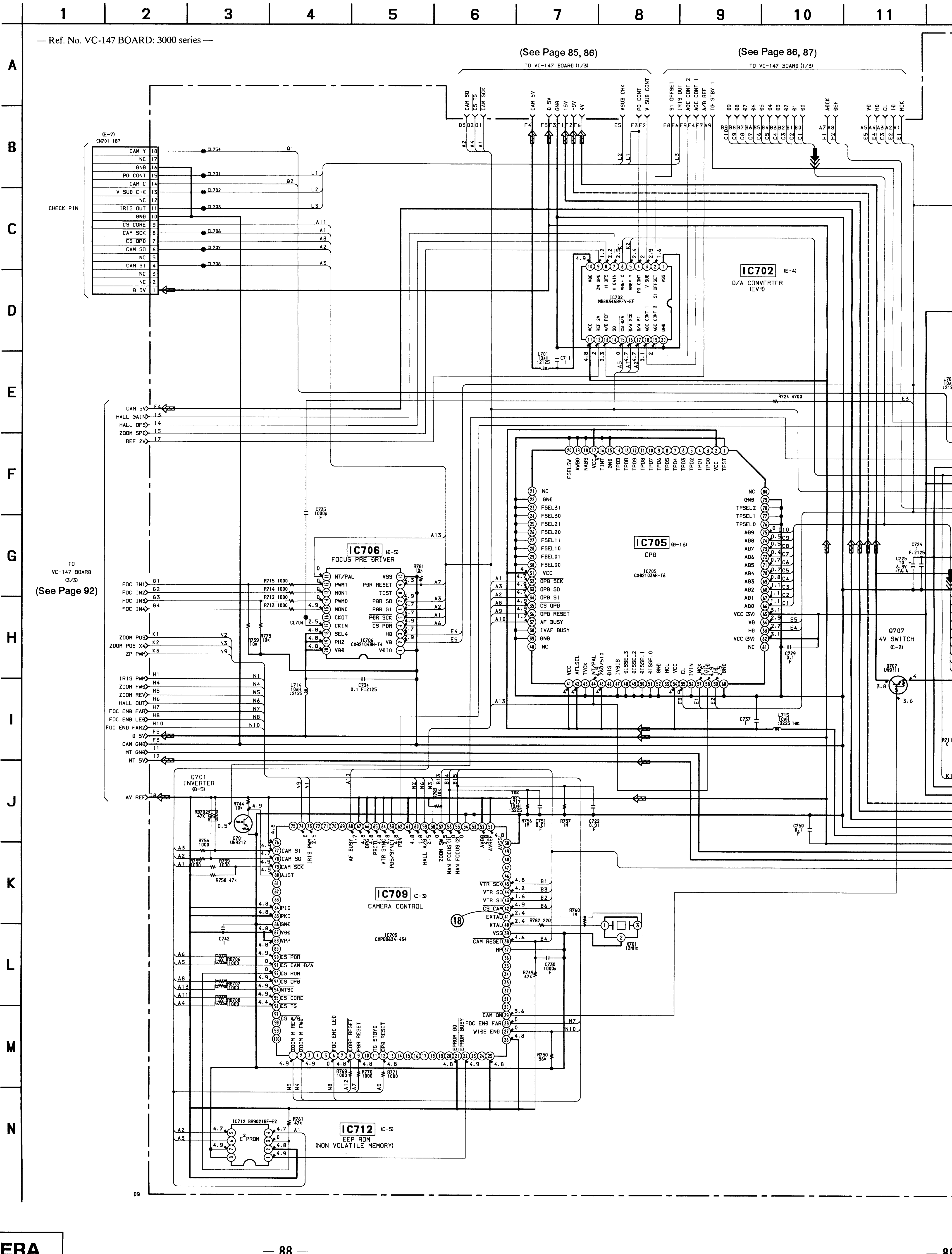
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡»
PB			


7
8
9
10
11
12
13
14
15
(See Page 89)
TO VC-147 BOARD (2/3)
CAM SO
CAM SCK
CS TG
CHASSIS GND
LND801
VD
HD
CL
ID
TG STBY 1
DEF
MCK
AGC CONT 1
AGC CONT 2
ADCK
D9 D8 D7 D6 D5 D4 D3 D2 D1 D0
4V
A/D REF
IRIS OUT
S1 OFFSET
L801 10µH :3225
CT801 6p
28M OSC
X801 28.375MHz
C802 15p
C806 1000p F
ROM ON/OFF
VSS1
TG SI
TG SCK
CSTG
EF
OSCI
OSCO
IC801 CXD1257AR
CK
XCK
TEST
HTSG
VD
HD
PS
CL
VDD1
GM
WEN
ID
PBLK
CLP4
TGSTBY1
TGSTBY0
C817 0.01 F
R810 2200
R809 2200
XSHP
XSHD
VSS1
XSP1
XSP2
XSH1
XSH2
DEF
CLP1
R812 2200
R813 2200
R816 10k
C821 33p
IC802 CXA1577R
STBY
EVA
CLK
MINV
LINV
D VCC
D VEE
D GND
D VCC
D GND4
D GND3
V REF TS
V REF T
V REF 1
V REF 2
V REF 3
V REF B
V REF BS
C803 0.1
C804 0.01 F
C805 0.01 F
C807 0.01 F
C809 0.1
D9 (MSB)
D8
D7
D6
D5
D4
D3
D2
D1
D0 (LSB)
C10 C9 C8 C7 C6 C5 C4 C3 C2 C1
VIN L
VIN H
CASCODE
A VCC
A VEE
D VCC2
UNDER
OVER
C813 0.1 F
C815 1
R833 0
R808 22
R831 0
(B-16) IC802
A/D CONVERTER
CHASSIS GND
LND802
R819 47
R825 8200
C818 1 16V :TA A
IC803 (A-3)
A/D BIAS AMP
IC803 CXA1399Q
CSOUT
CSCLP
VRTS
VRTO
VRBO
VRBS
VCC3
OUTCLP
CSSL
AGCMAX
AGCCONT
GND1
XSHP
XSHD
VCC1
CLP4
OUT
GND3
VCLP
CLP1
CAV1
STBY
VTRIN
EMPHIN
PGIN
DATAIN
ADJ
AGCOUT
VCC2
ADCK
GND2
CAMIN
C826 0.1 F
(B-3) Q801 BUFFER
Q801 2SD2216QR
R803 1500
R806 1800
R807 470
C836 47 6.3V :AL
L804 10µH :3225 TDK
R823 1k 0.5%
R830 1000 0.5%
C832 1000p F
C834 0.1 F
IC805 CXA1390AR
CLP4
XSHD
XSHP
AGC-SEL
AGC-MAX
AGC-CONT
OP-OUT
OPIN-N
OPIN-P
AGC-OUT
AGC-CLP
DET-LEVEL
PG-IN
DATA-IN
VCC1
XSP3
XSP2
XSP1
GND
FSHI
F3-CLP
F2-CLP
F1-CLP
XSH2
DET-OUT
VCC2
IRIS-GC
IRIS-LEVEL
DET-CLP
GND
IRIS-CLP
IRIS-OUT
VG-OUT
WND
PBLK
CLP1
XSH1
DC-OUT
GY-OUT
F1-OUT
F2-OUT
F3-OUT
CS-CLP
CS-CCD-GC
CS-AGC-GC
CS-AGC-SL
C823 1 16V :TA A
C839 0.01 F
C835 0.01 F
C808 1 16V :TA A
R821 3.3M
C833 0.01 F
①
③
④
⑤
⑥

no mark:CAMERA REC mode **VC-147 BOARD (1/3)**

VC-147 (CAMERA) SCHEMATIC DIAGRAM

• Refer to page 81 for Printed Wiring Board.



— Ref. No. VC-147 BOARD: 3000 series —

1
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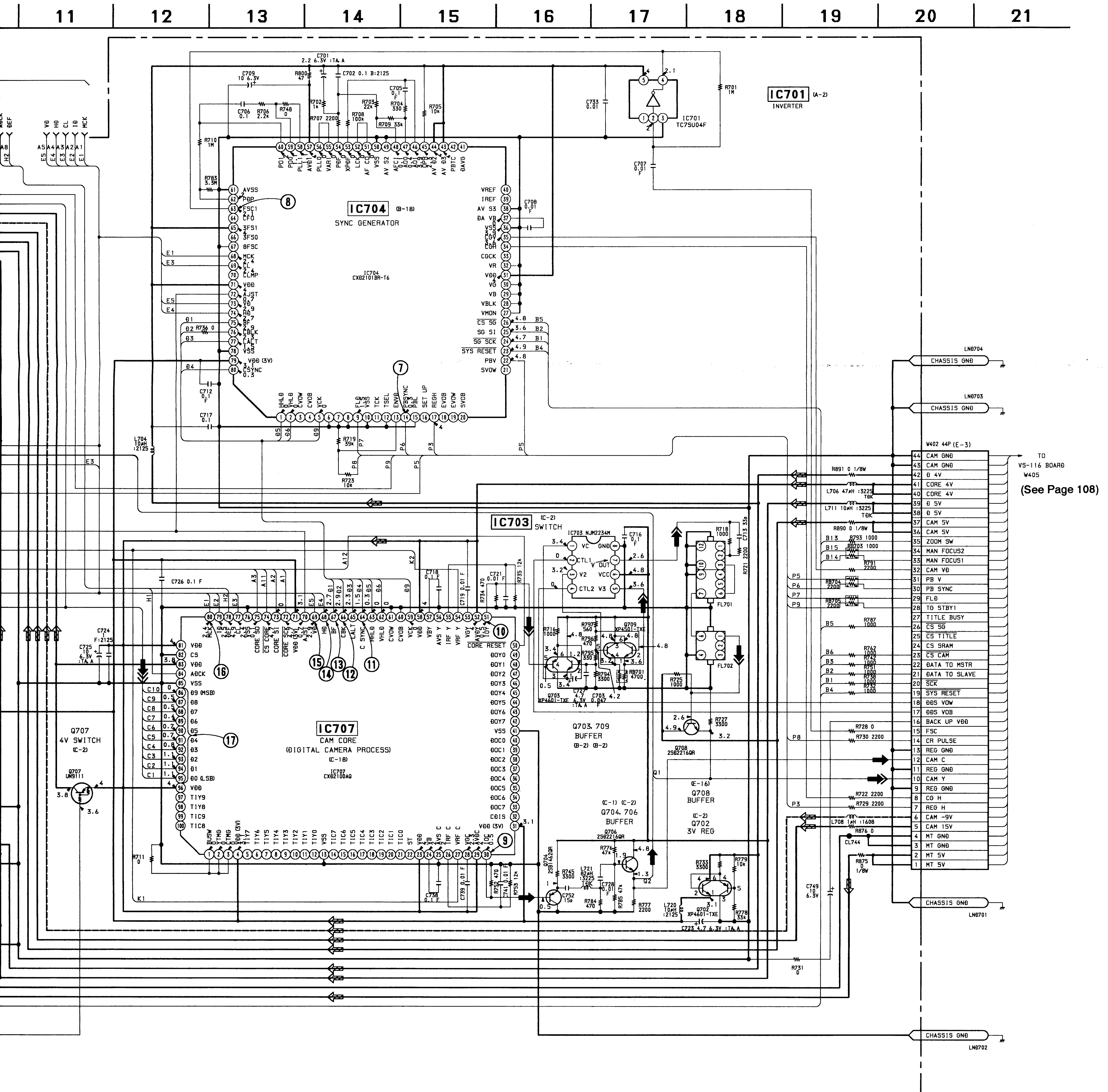
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
(See Page 85, 86)
TO VC-147 BOARD (1/3)
(See Page 86, 87)
TO VC-147 BOARD (1/3)
CAM SO
CS TG
CAM SCK
CAM 5V
D 5V
GND
15V
-9V
4V
VSUB CHK
PG CONT
V SUB CONT
S1 OFFSET
IRIS OUT
AGC CONT 2
AGC CONT 1
A/D REF
TG STBY 1
ADCK
DEF
VD
HD
CL
ID
MCK
(E-7)
CN701 18P
CAM Y
NC
GND
PG CONT
CAM C
V SUB CHK
IRIS OUT
CS CORE
CAM SCK
CS OPD
CAM SO
CAM SI
D 5V
CHECK PIN
CL754
CL701
CL702
CL703
CL706
CL707
CL708
IC702 (E-4)
D/A CONVERTER (EVR)
IC702 MB88346BPFV-EF
L701 10μH :2125
C711 1
R724 4700
CAM 5V
HALL GAIN
HALL OFS
ZOOM SPD
REF 2V
TO VC-147 BOARD (3/3)
(See Page 92)
FOC IN1
FOC IN2
FOC IN3
FOC IN4
ZOOM POS
ZOOM POS X4
ZP PWM
IRIS PWM
ZOOM FWD
ZOOM REV
HALL OUT
FOC END FAR
FOC END LED
FOC END FAR2
D 5V
CAM GND
MT GND
MT 5V
AV REF
C735 1000p F
IC706 (D-5)
FOCUS PRE DRIVER
IC706 CXD2104BN-T4
R715 1000
R714 1000
R712 1000
R713 1000
R781 10k
R739 10k
R775 10k
CL704
L714 10μH :2125
C734 0.1 F:2125
IC705 (B-16)
OPD
IC705 CXD2103AR-T6
C737 1
L715 10μH :3225 TOK
C729 0.1 F
C724 F:2125
C725 10 6.3V :TA A
Q707 4V SWITCH (C-2)
Q707 UN9111
Q701 INVERTER (D-5)
Q701 UN9212
R744 10k
RB702 47K
R754 1000
R755 1000
R759 1000
R758 47k
L717 10μH :3225
R756 1M
C751 0.01 F
R757 1M
C722 0.01 F
C750 0.1 F
IC709 (C-3)
CAMERA CONTROL
IC709 CXP80624-434
R760 1M
R782 220
X701 12MHz
C742 1
RB706 1000
RB707 1000
RB708 1000
R749 47k
C730 1000p F
R750 56k
R769 1000
R770 1000
R771 1000
18
IC712 BR9021BF-E2
E²PROM
R761 47k
IC712 (C-5)
EEP ROM
(NON VOLATILE MEMORY)
09


11
12
13
14
15
16
17
18
19
20
21
IC701 (A-2)
INVERTER
IC701 TC7SU04F
IC704 (B-1B)
SYNC GENERATOR
IC704 CXD2101BR-T6
IC703 (C-2)
SWITCH
IC703 NJM2234M
IC707
CAM CORE
(DIGITAL CAMERA PROCESS)
(C-1B)
IC707 CXD2100AQ
Q707
4V SWITCH
(C-2)
Q707 UN9111
Q703, 709
BUFFER
(B-2) (B-2)
(C-1) (C-2)
Q704, 706
BUFFER
(E-1B)
Q708
BUFFER
(C-2)
Q702
3V REG
FL701
FL702
LN0704
CHASSIS GND
LN0703
CHASSIS GND
W402 44P (E-3)
44 CAM GND
43 CAM GND
42 D 4V
41 CORE 4V
40 CORE 4V
39 D 5V
38 D 5V
37 CAM 5V
36 CAM 5V
35 ZOOM SW
34 MAN FOCUS2
33 MAN FOCUS1
32 CAM VD
31 PB V
30 PB SYNC
29 FLD
28 TG STBY1
27 TITLE BUSY
26 CS SG
25 CS TITLE
24 CS SRAM
23 CS CAM
22 DATA TO MSTR
21 DATA TO SLAVE
20 SCK
19 SYS RESET
18 DDS VOW
17 DDS VOB
16 BACK UP VDD
15 FSC
14 CR PULSE
13 REG GND
12 CAM C
11 REG GND
10 CAM Y
9 REG GND
8 CG H
7 REG H
6 CAM -9V
5 CAM 15V
4 MT GND
3 MT GND
2 MT 5V
1 MT 5V
CHASSIS GND
LN0701
CHASSIS GND
LN0702
TO
VS-116 BOARD
W405
(See Page 108)

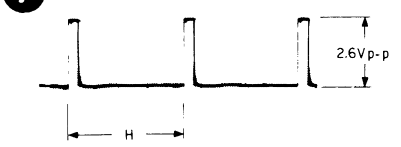
·SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	⇛	⇛»
PB			

no mark:CAMERA REC mode **VC-147 BOARD (2/3)**

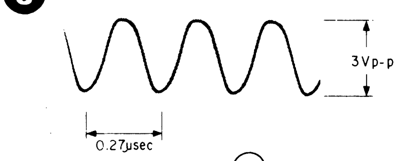
VC-147 BOARD (2/3)

⑦



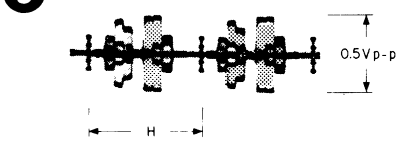
IC704 ⑭

⑧



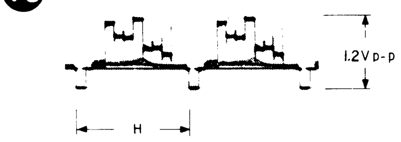
IC704 (63)

⑨



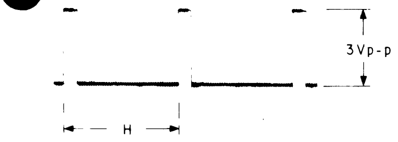
IC707 (30)

⑩



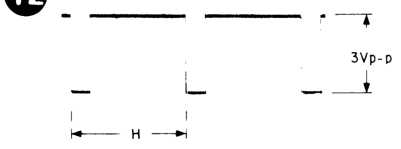
IC707 (51)

⑪



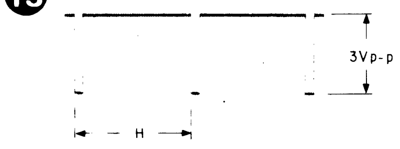
IC707 (64)

⑫



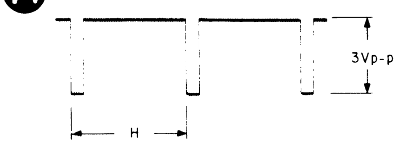
IC707 (66)

⑬



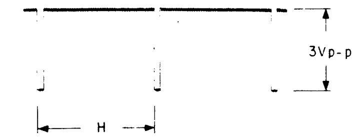
IC707 (67)

⑭



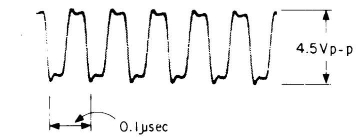
IC707 (68)

⑮



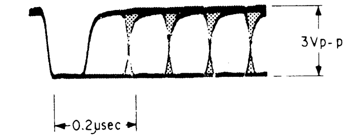
IC707 (69)

⑯



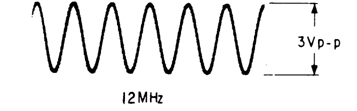
IC707 (80)

⑰



IC707 (86) - (95)

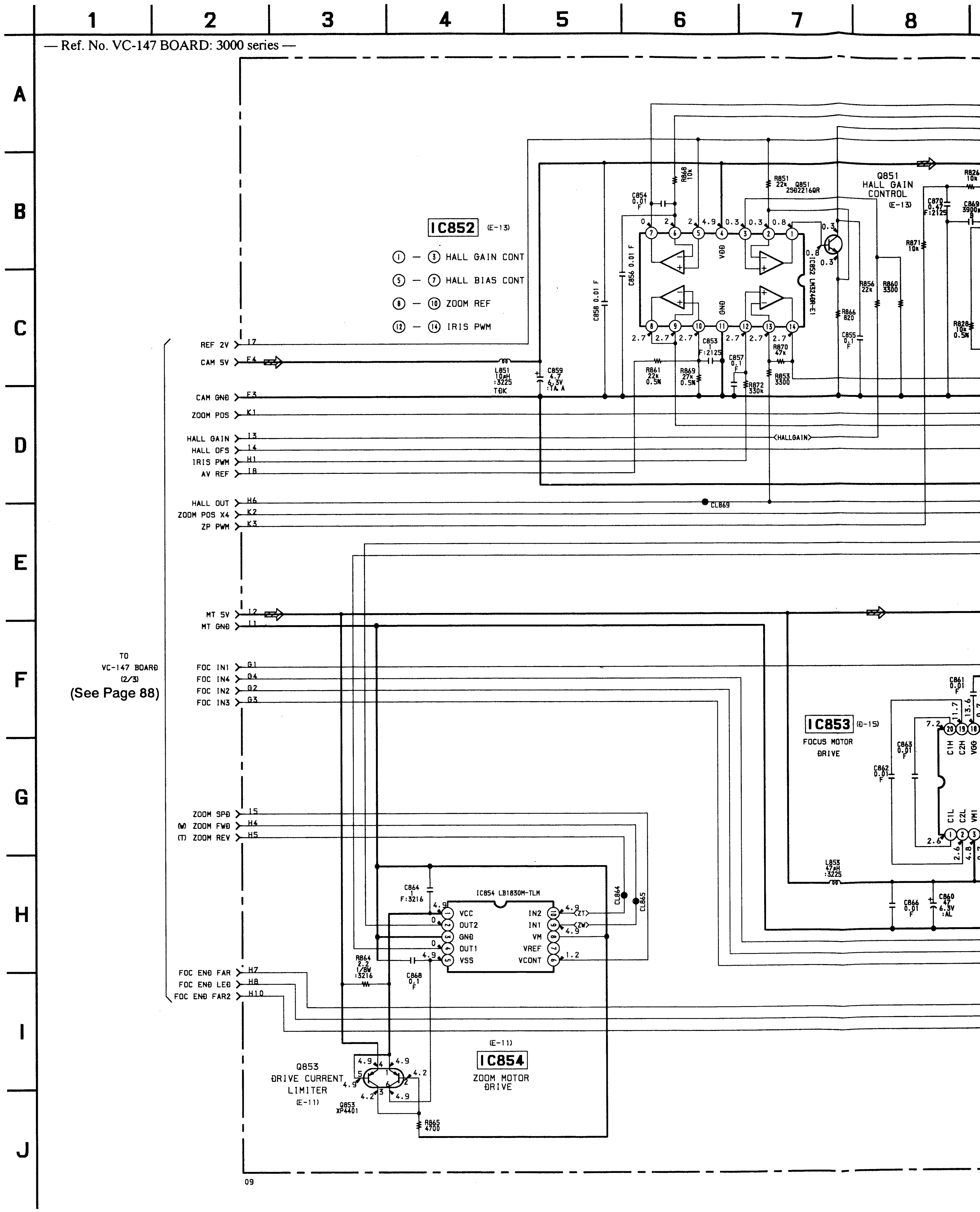
⑱



IC709 (41)

VC-147 (LENS DRIVE) SCHEMATIC DIAGRAM

• Refer to page 81 for Printed Wiring Board.


1
2
3
4
5
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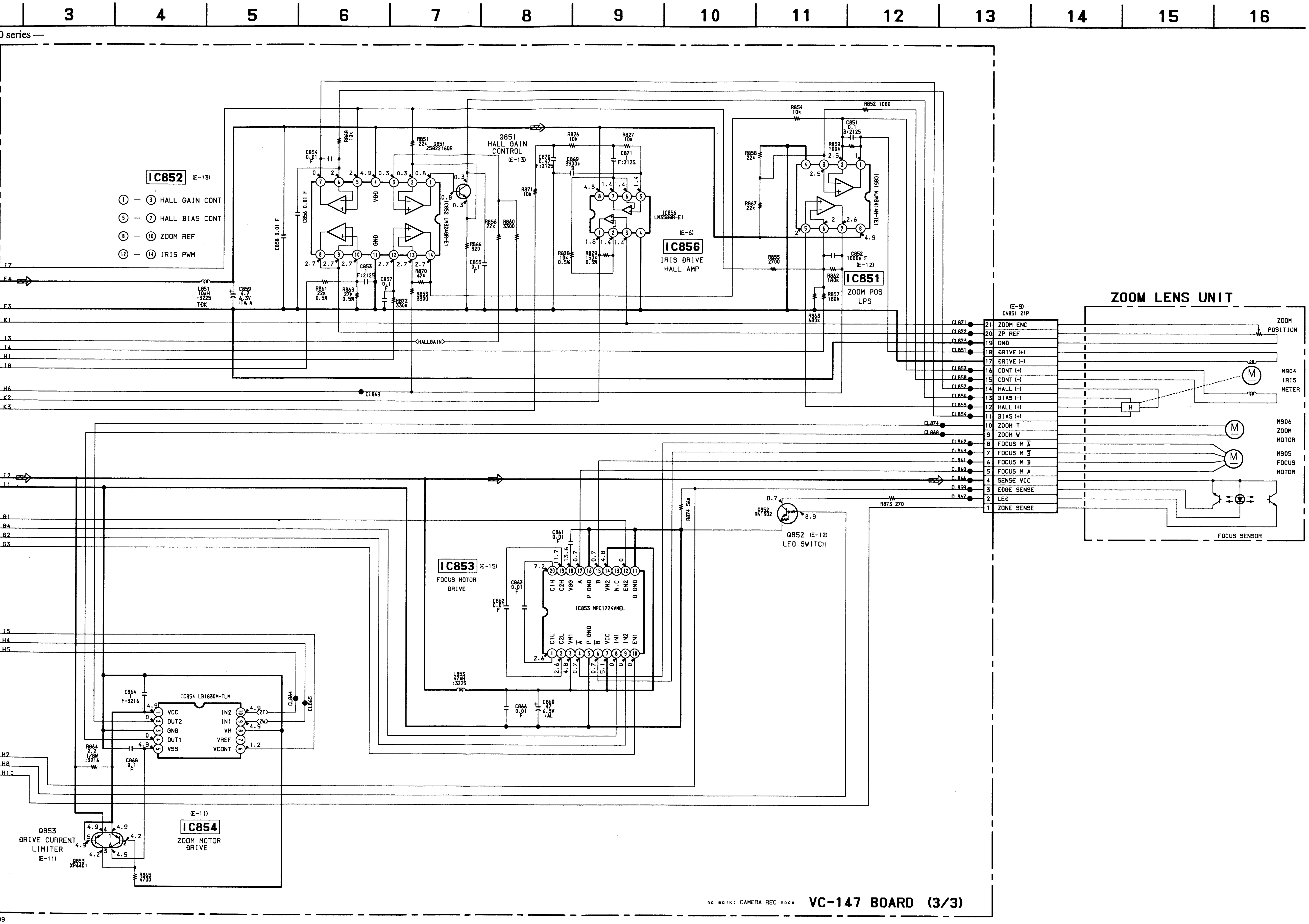
7
8
A
B
C
D
E
F
G
H
I
J
— Ref. No. VC-147 BOARD: 3000 series —
IC852 (E-13)
① — ③ HALL GAIN CONT
⑤ — ⑦ HALL BIAS CONT
⑧ — ⑩ ZOOM REF
⑫ — ⑭ IRIS PWM
Q851
HALL GAIN
CONTROL
(E-13)
REF 2V
CAM 5V
CAM GND
ZOOM POS
HALL GAIN
HALL OFS
IRIS PWM
AV REF
HALL OUT
ZOOM POS X4
ZP PWM
MT 5V
MT GND
TO
VC-147 BOARD
(2/3)
(See Page 88)
FOC IN1
FOC IN4
FOC IN2
FOC IN3
ZOOM SPD
(W) ZOOM FWD
(T) ZOOM REV
FOC ENB FAR
FOC ENB LEB
FOC ENB FAR2
<HALLGAIN>
CL869
CL864
CL865
IC853 (D-15)
FOCUS MOTOR
DRIVE
IC854 LB1830M-TLM
VCC
OUT2
GND
OUT1
VSS
IN2
IN1
VM
VREF
VCONT
Q853
DRIVE CURRENT
LIMITER
(E-11)
Q853
XP4401
(E-11)
IC854
ZOOM MOTOR
DRIVE
L851 10μH :3225 TDK
L853 47μH :3225
09

- Refer to page 81 for Printed Wiring Board.

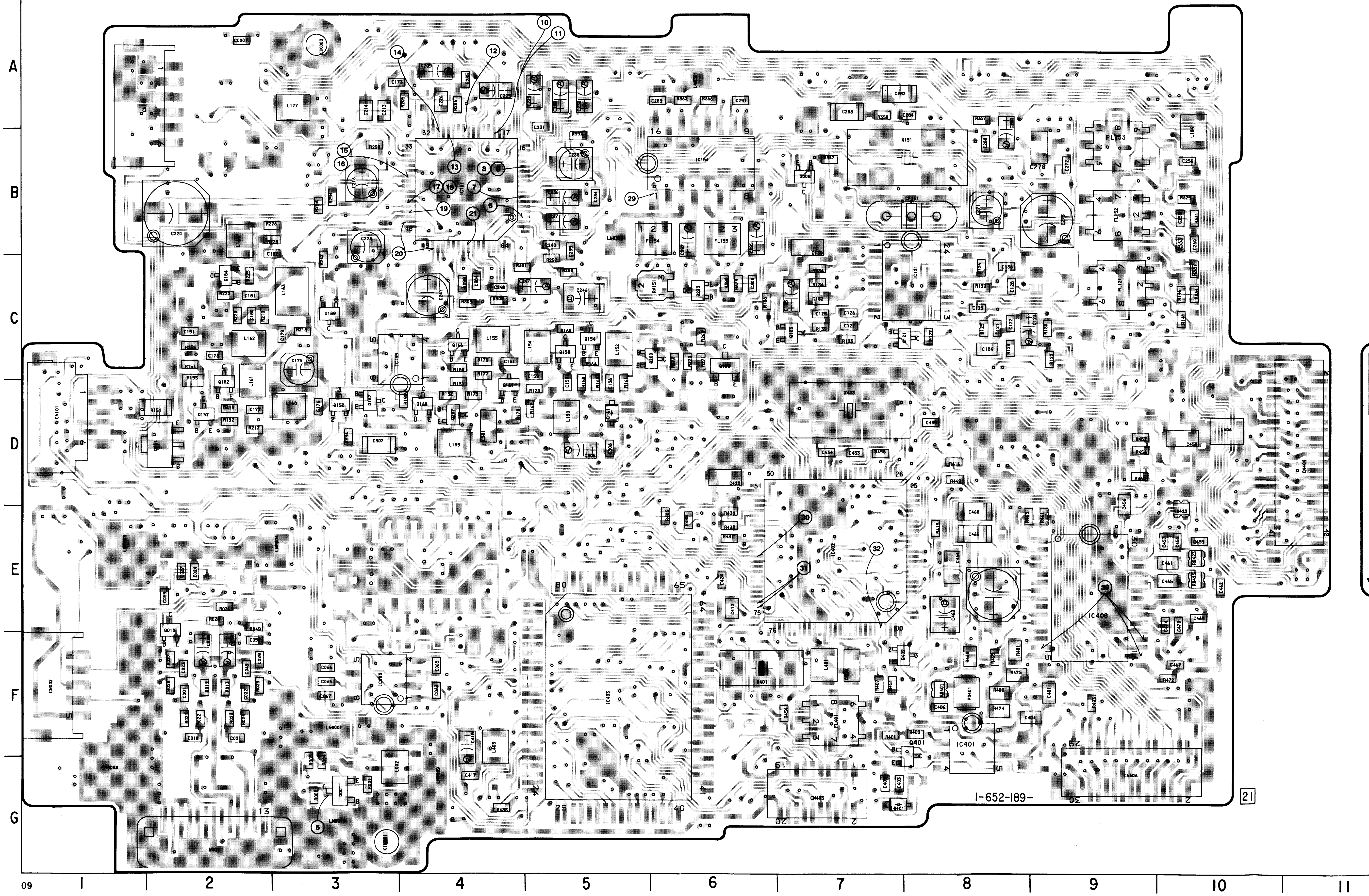
) series —


3
4
5
6
7
8
9
10
11
12
13
14
15
16
IC852 (E-13)
① — ③ HALL GAIN CONT
⑤ — ⑦ HALL BIAS CONT
⑧ — ⑩ ZOOM REF
⑫ — ⑭ IRIS PWM
IC852 LM324ØR-E1
VDD
GND
C854 0.01 F
R868 10k
C856 0.01 F
C858 0.01 F
R851 22k
Q851 2SB2216QR
Q851 HALL GAIN CONTROL (E-13)
R856 22k
R860 3300
R866 820
C855 0.1 F
R870 47k
R853 3300
R872 330k
C857 0.1 F
C853 1 F:2125
R861 22k 0.5%
R869 27k 0.5%
L851 10µH :3225 TDK
C859 4.7 6.3V :TA A
<HALLGAIN>
CL869
R871 10k
C870 0.47 F:2125
C869 3900p B
R826 10k
R827 10k
C871 1 F:2125
R828 10k 0.5%
R829 150k 0.5%
IC856 LM358ØR-E1
(E-6)
IC856
IRIS DRIVE HALL AMP
R854 10k
R852 1000
C851 0.1 B:2125
R859 100k
R858 22k
R867 22k
R855 2700
C852 1000p F
(E-12)
R862 180k
R857 180k
R863 680k
IC851 NJM3414M-TE1
IC851
ZOOM POS LPS
(E-9)
CN851 21P
21 ZOOM ENC
20 ZP REF
19 GND
18 DRIVE (+)
17 DRIVE (–)
16 CONT (+)
15 CONT (–)
14 HALL (–)
13 BIAS (–)
12 HALL (+)
11 BIAS (+)
10 ZOOM T
9 ZOOM W
8 FOCUS M A̅
7 FOCUS M B̅
6 FOCUS M B
5 FOCUS M A
4 SENSE VCC
3 EDGE SENSE
2 LED
1 ZONE SENSE
CL871
CL872
CL873
CL851
CL853
CL858
CL857
CL856
CL855
CL854
CL874
CL868
CL862
CL863
CL861
CL860
CL866
CL859
CL867
ZOOM LENS UNIT
ZOOM POSITION
M904 IRIS METER
H
M906 ZOOM MOTOR
M905 FOCUS MOTOR
FOCUS SENSOR
R873 270
Q852 RN1302
Q852 (E-12) LED SWITCH
R874 56k
IC853 (D-15)
FOCUS MOTOR DRIVE
IC853 MPC1724VMEL
C1H
C2H
VGG
A
P GND
B
VM2
N.C
EN2
D GND
C1L
C2L
VM1
A̅
P GND
B̅
VCC
IN1
IN2
EN1
C861 0.01 F
C863 0.01 F
C862 0.01 F
L853 47µH :3225
C866 0.01 F
C860 47 6.3V :AL
IC854 LB1830M-TLM
VCC
OUT2
GND
OUT1
VSS
IN2
IN1
VM
VREF
VCONT
<ZT>
<ZW>
CL864
CL865
C864 1 F:3216
R864 2.2 1/8W :3216
C868 0.1 F
Q853 DRIVE CURRENT LIMITER (E-11)
Q853 XP4401
R865 4700
(E-11)
IC854
ZOOM MOTOR DRIVE
no mark: CAMERA REC mode
VC-147 BOARD (3/3)

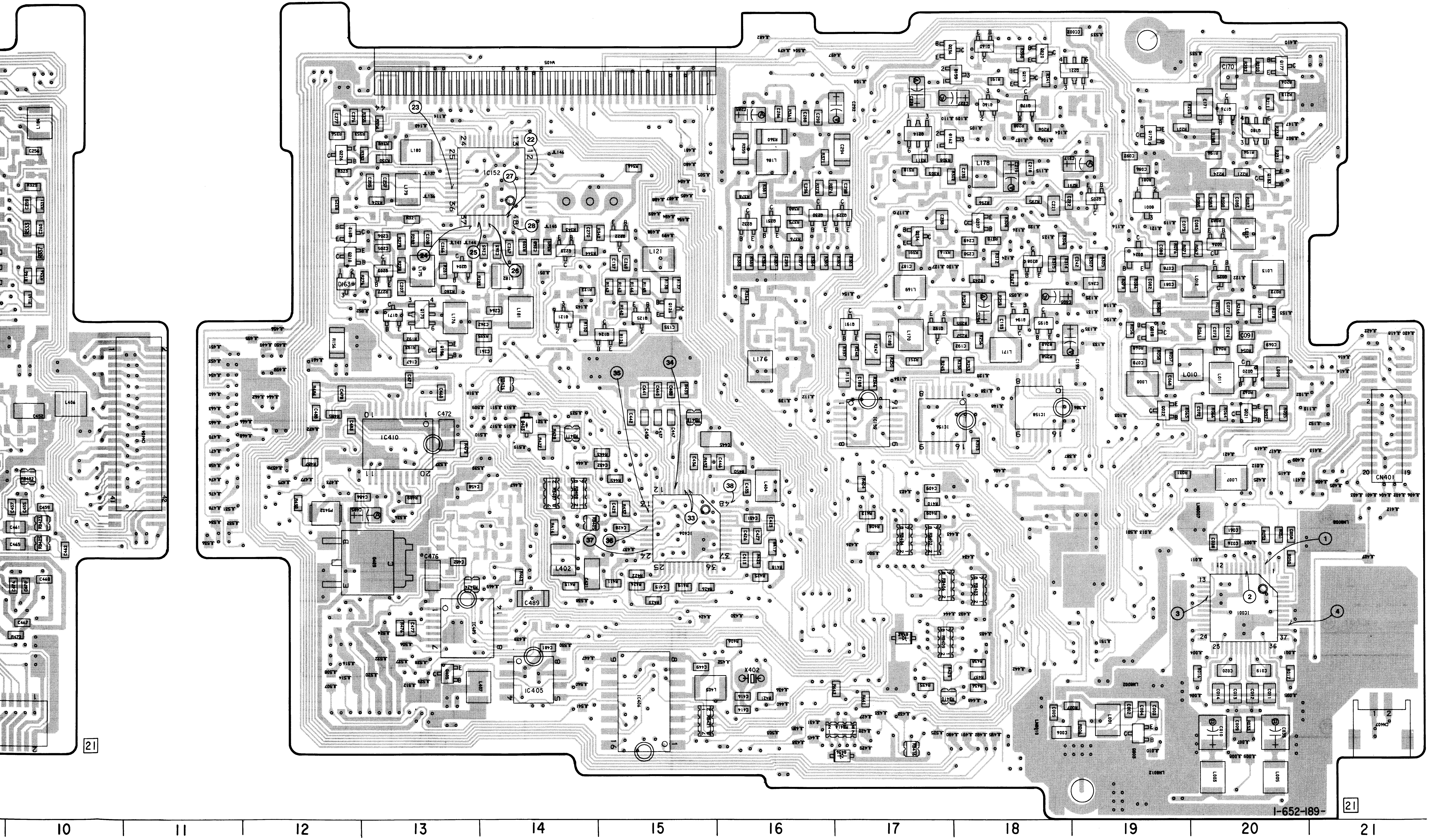
VS-116 (REC/PB HEAD AMPLIFIER, VIDEO, SERVO, SYSTEM CONTROL) PRINTED WIRING BOARD

— Ref. No. VS-116 BOARD: 4000 series —

VS-116 BOARD (COMPONENT SIDE)


A
B
C
D
E
F
G
09
1
2
3
4
5
6
7
8
9
10
11
IC151
IC154
IC121
IC155
IC402
IC403
IC408
IC401
IC003
CN101
CN002
CN403
CN404
CN406
X151
X401
X403
FL151
FL152
FL153
FL154
FL155
W001
L177
L163
L162
L161
L160
L155
C220
C275
C271
1-652-189-
21

VS-116 BOARD (CONDUCTOR SIDE)


IC152
IC410
IC409
IC405
IC406
IC404
IC156
IC158
IC001
CN401
X402
L402
C489
C472
C476
1-652-189-
21
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19
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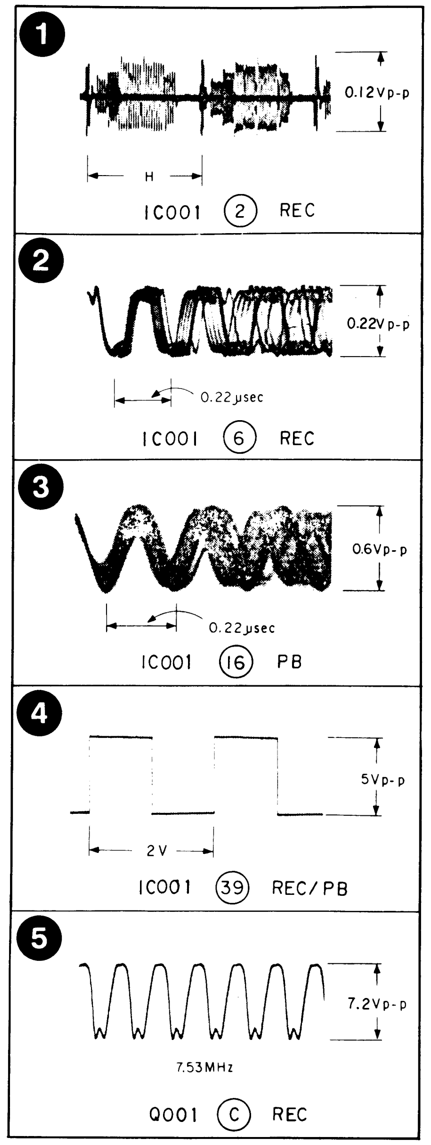
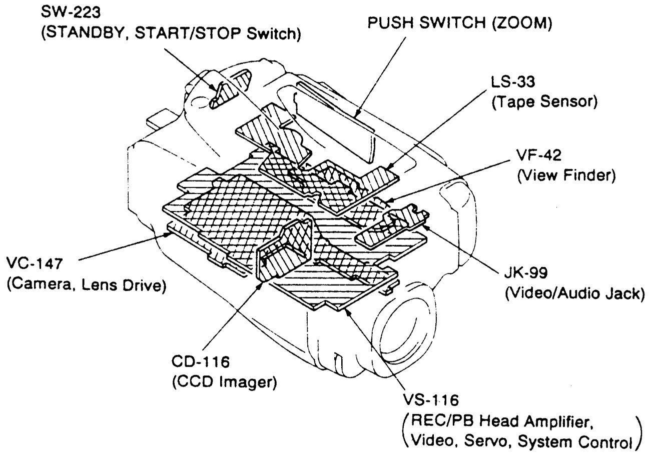
21

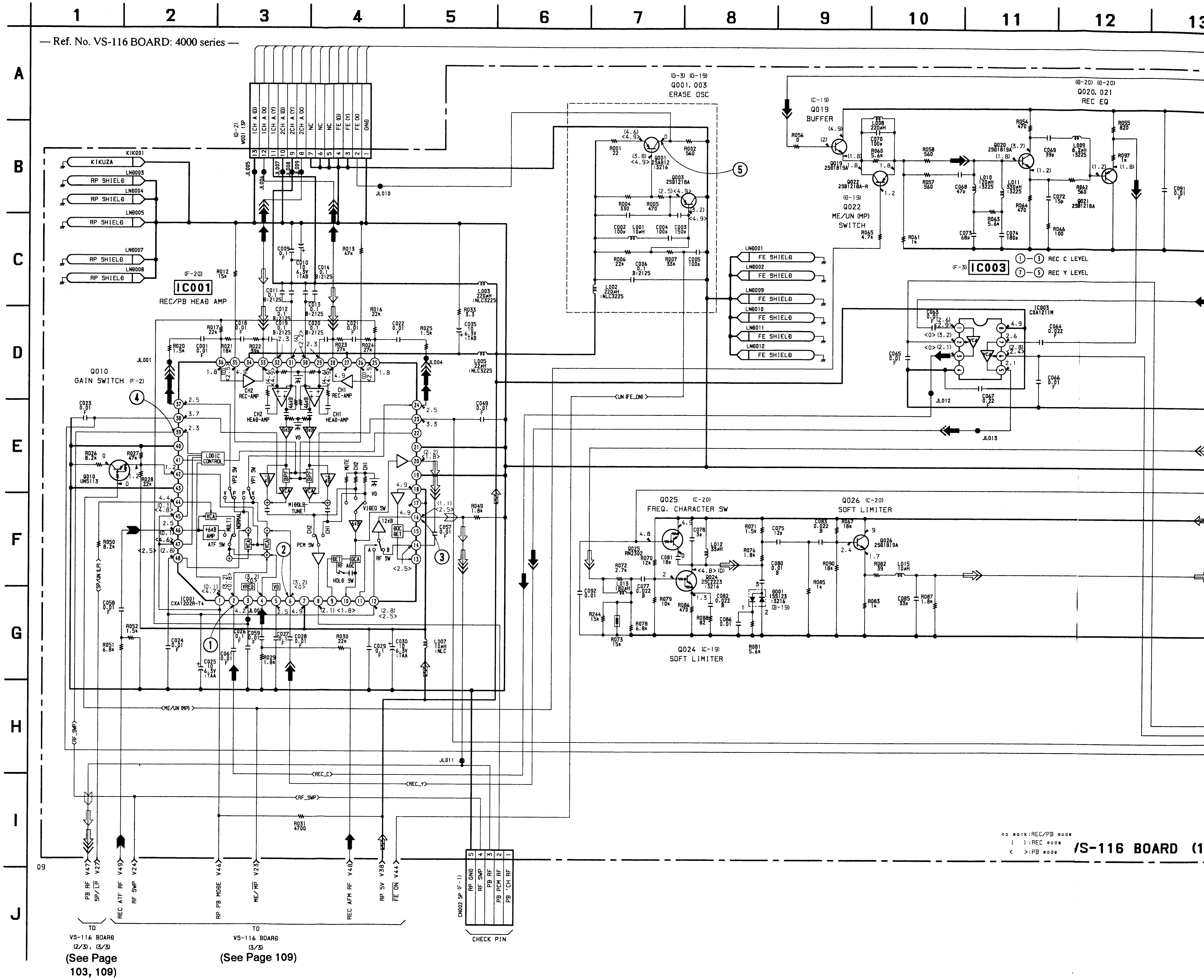
VS-116 BOARD (1/3)




SW-223
(STANDBY, START/STOP Switch)
PUSH SWITCH (ZOOM)
LS-33
(Tape Sensor)
VF-42
(View Finder)
VC-147
(Camera, Lens Drive)
JK-99
(Video/Audio Jack)
CD-116
(CCD Imager)
VS-116
(REC/PB Head Amplifier, Video, Servo, System Control)

VS-116 (REC/PB HEAD AMPLIFIER) SCHEMATIC DIAGRAM

— Ref. No. VS-116 BOARD: 4000 series —


1
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9
10
11
12
A
B
C
D
E
F
G
H
I
J
(G-2) W001 13P
1CH A (G)
1CH A (X)
1CH A (Y)
2CH A (G)
2CH A (Y)
2CH A (X)
NC
NC
FE (G)
FE (Y)
FE (X)
GND
KIKUZA
RP SHIELD
LN0003
LN0004
LN0005
LN0007
LN0008
IC001
REC/PB HEAD AMP
(F-20)
CH2 REC-AMP
CH1 REC-AMP
CH2 HEAD-AMP
CH1 HEAD-AMP
LOGIC CONTROL
ATF SW
PCM SW
RF SW
VIDEO SW
MIDDLE-TUNE
HOLD SW
MUTE
IC001 CXA1202M-T4
Q010 GAIN SWITCH (F-2)
Q010 UN5113
(G-3) (G-19) Q001, 003 ERASE OSC
Q001 2SA812 :3216
Q003 2SB1218A
(C-19) Q019 BUFFER
Q019 2SB1819A
Q022 2SB1218A-R
(B-19) Q022 ME/UN (MP) SWITCH
(B-20) (B-20) Q020, 021 REC EQ
Q020 2SB1819A
Q021 2SB1218A
FE SHIELD
LN0001
LN0002
LN0009
LN0010
LN0011
LN0012
(F-3) IC003
①–③ REC C LEVEL
⑦–⑤ REC Y LEVEL
IC003 CXA1211M
JL012
JL013
Q025 (C-20) FREQ. CHARACTER SW
Q025 RN2302
Q024 2SC2223 :3216
Q024 (C-19) SOFT LIMITER
Q026 (C-20) SOFT LIMITER
Q026 2SB1819A
D001 1SS123 :3216 (B-19)
<UN (FE_ON)>
<ME/UN (MP)>
<REC_C>
<REC_Y>
<RF_SWP>
JL011
(SP/UN (LP))
R031 4700
PB RF V47
SP/LP V27
REC ATF RF V49
RF SWP V24
RP PB MODE V46
ME/MP V23
REC AFM RF V48
RP 5V V38
FE ON V44
TO VS-116 BOARD (2/3), (3/3)
(See Page 103, 109)
TO VS-116 BOARD (3/3)
(See Page 109)
CN002 5P (F-1)
RP GND
RF SWP
PB RF
PB PCM RF
PB 'CH RF
CHECK PIN
09

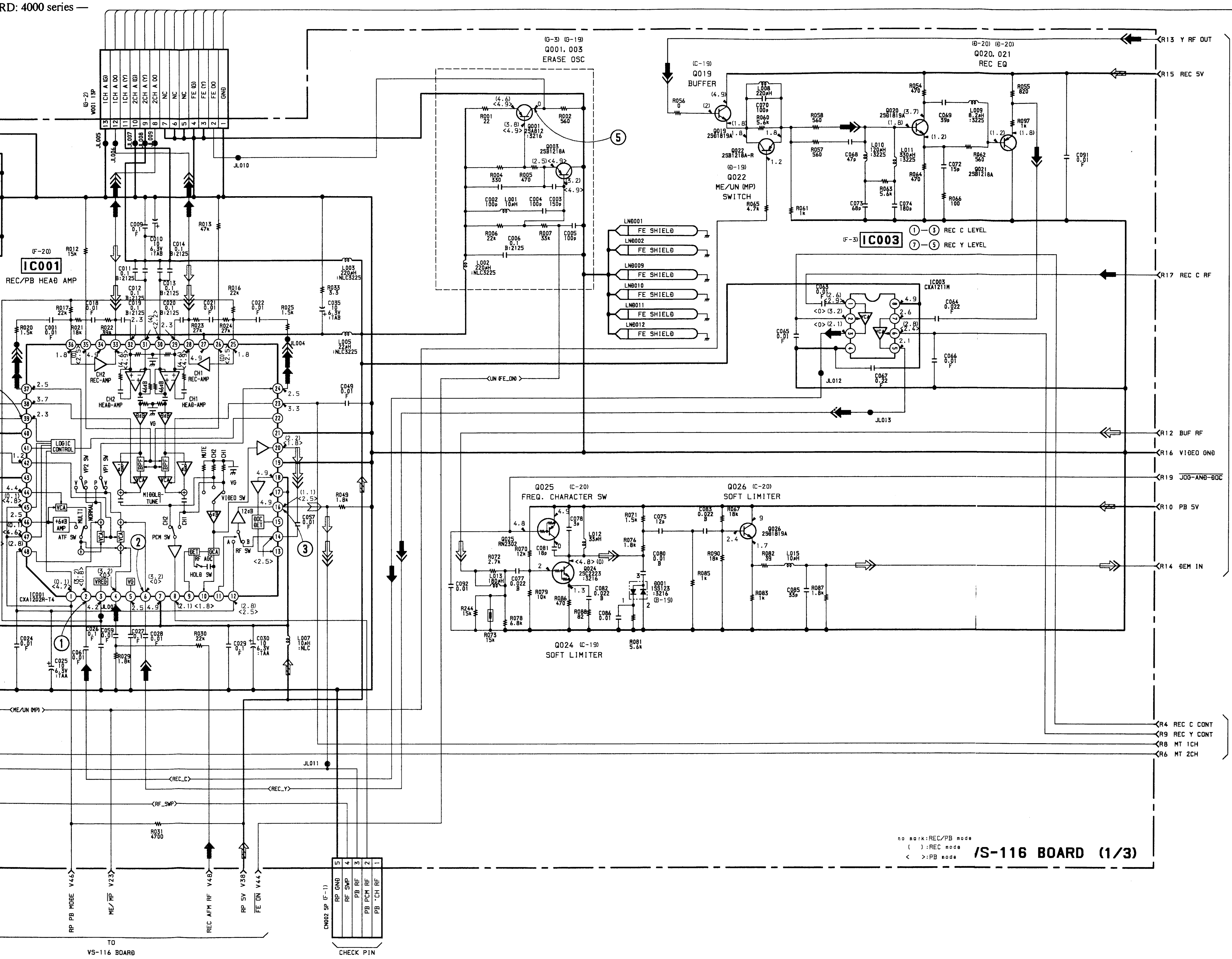
no mark:REC/PB mode
( ):REC mode
< >:PB mode

VS-116 BOARD (1

AD AMPLIFIER) SCHEMATIC DIAGRAM

2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

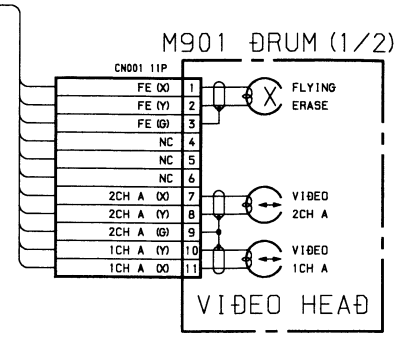
RD: 4000 series —


W001 SP (D-2)
1CH A (G)
1CH A (X)
1CH A (Y)
2CH A (G)
2CH A (Y)
2CH A (X)
NC
NC
FE (G)
FE (Y)
FE (X)
GND
JL005
JL006
JL007
JL008
JL009
JL010
(F-20)
IC001
REC/PB HEAD AMP
CH2 REC-AMP
CH1 REC-AMP
CH2 HEAD-AMP
CH1 HEAD-AMP
LOGIC CONTROL
VCA
+6dB AMP
ATF SW
MULTI
NORMAL
PCM SW
MIDDLE-TUNE
MUTE
VIDEO SW
RF SW
RF AGC
HOLD SW
DET
DOC DET
12dB
IC001 CXA1202R-T4
(D-3) (D-19)
Q001, 003
ERASE OSC
Q001 2SA1812 :3216
Q003 2SB1218A
L002 220μH :NLC3225
L003 220μH :NLC3225
L005 22μH :NLC3225
LN0001 FE SHIELD
LN0002 FE SHIELD
LN0009 FE SHIELD
LN0010 FE SHIELD
LN0011 FE SHIELD
LN0012 FE SHIELD
<UN FE_ON>
(C-19)
Q019
BUFFER
Q019 2SB1819A
Q022 2SB1218A-R
(D-19)
Q022
ME/UN (MP)
SWITCH
(D-20) (D-20)
Q020, 021
REC EQ
Q020 2SB1819A
Q021 2SB1218A
(F-3) IC003
①—③ REC C LEVEL
⑦—⑤ REC Y LEVEL
IC003 CXA1211M
JL012
JL013
Q025 (C-20)
FREQ. CHARACTER SW
Q025 RN2302
Q026 (C-20)
SOFT LIMITER
Q026 2SB1819A
Q024 2SC2223 :3216
Q024 (C-19)
SOFT LIMITER
D001 1SS123 :3216 (B-19)
R13 Y RF OUT
R15 REC 5V
R17 REC C RF
R12 BUF RF
R16 VIDEO GND
R19 JOG-AND-DOC
R10 PB 5V
R14 GEM IN
R4 REC C CONT
R9 REC Y CONT
R8 MT 1CH
R6 MT 2CH
<ME/UN (MP)>
<REC_C>
<REC_Y>
<RF_SWP>
JL011
RP PB MODE V46
ME/HP V23
REC AFM RF V48
RP 5V V38
FE ON V44
CN002 5P (F-1)
RP GND
RF SWP
PB RF
PB PCM RF
*CH RF
CHECK PIN
①
②
③
⑤

TO
VS-116 BOARD
(3/3)
(See Page 109)

no mark:REC/PB mode
(   ):REC mode
<   >:PB mode

VS-116 BOARD (1/3)


M901 DRUM (1/2)
CN001 11P
FE (X) 1
FE (Y) 2
FE (G) 3
NC 4
NC 5
NC 6
2CH A (X) 7
2CH A (Y) 8
2CH A (G) 9
1CH A (Y) 10
1CH A (X) 11
FLYING ERASE
VIDEO 2CH A
VIDEO 1CH A
VIDEO HEAD

TO
VS-116 BOARD
(2/3)
(See Page 103, 104)

·SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡⋙	➡
PB		⇨»	⇨⋙	⇨

·SIGNAL PATH

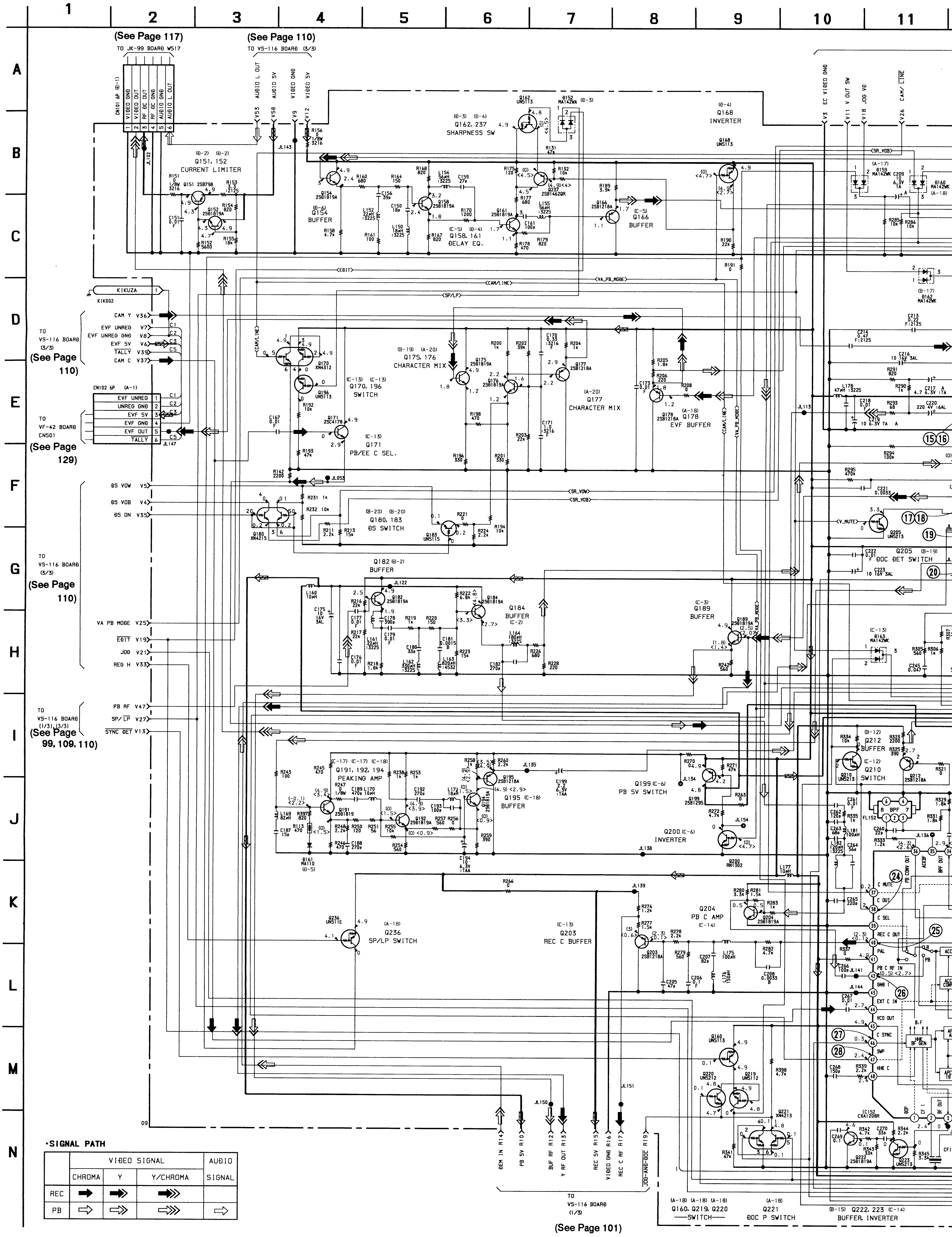
	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal	➤		⊳

TO
VS-116 BOARD
(2/3)
(See Page 105)

VS-116 (VIDEO) SCHEMATIC DIAGRAM

— Ref. No. VS-116 BOARD: 4000 series —

- Refer to page 95 for Printed Wiring Board.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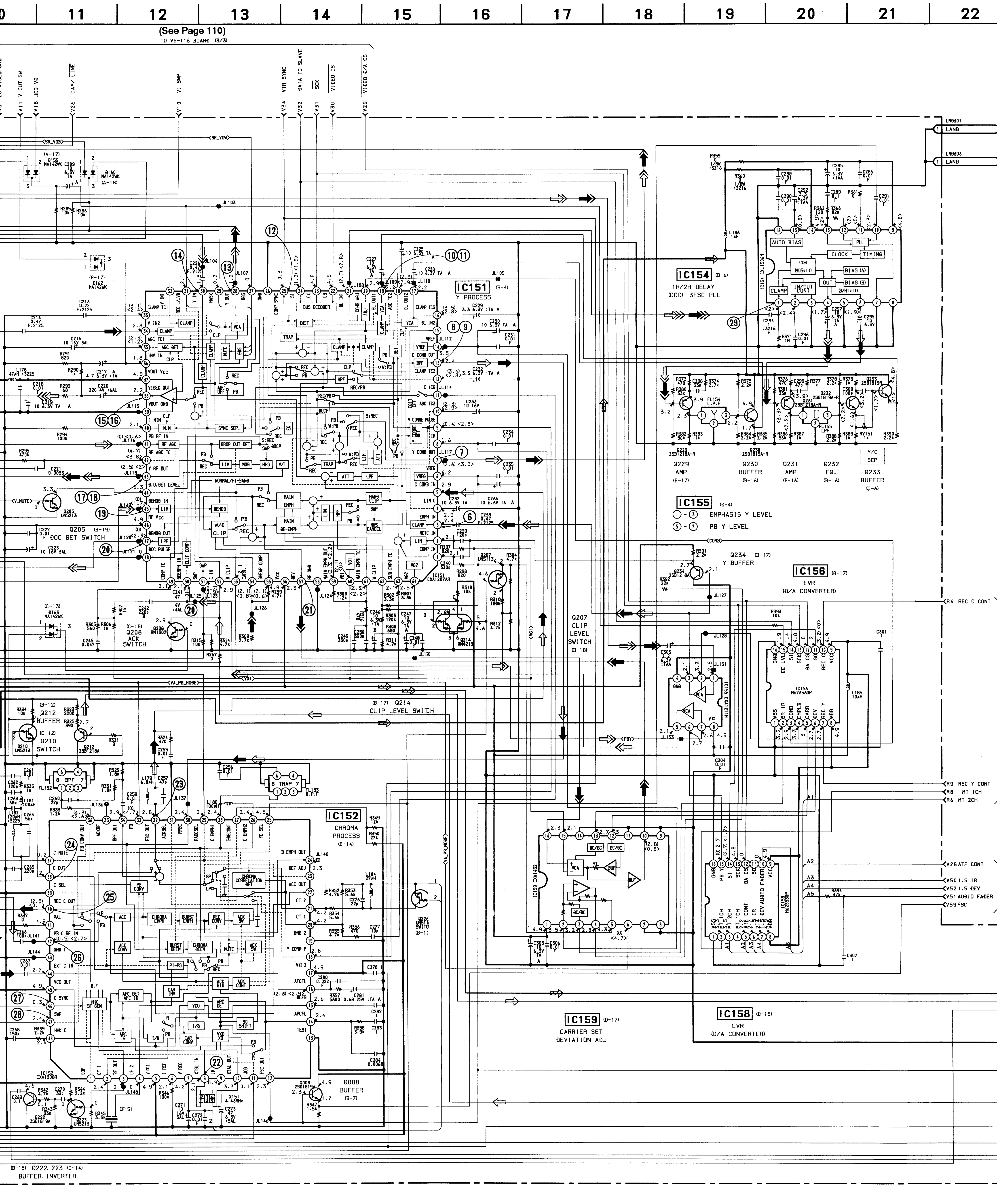
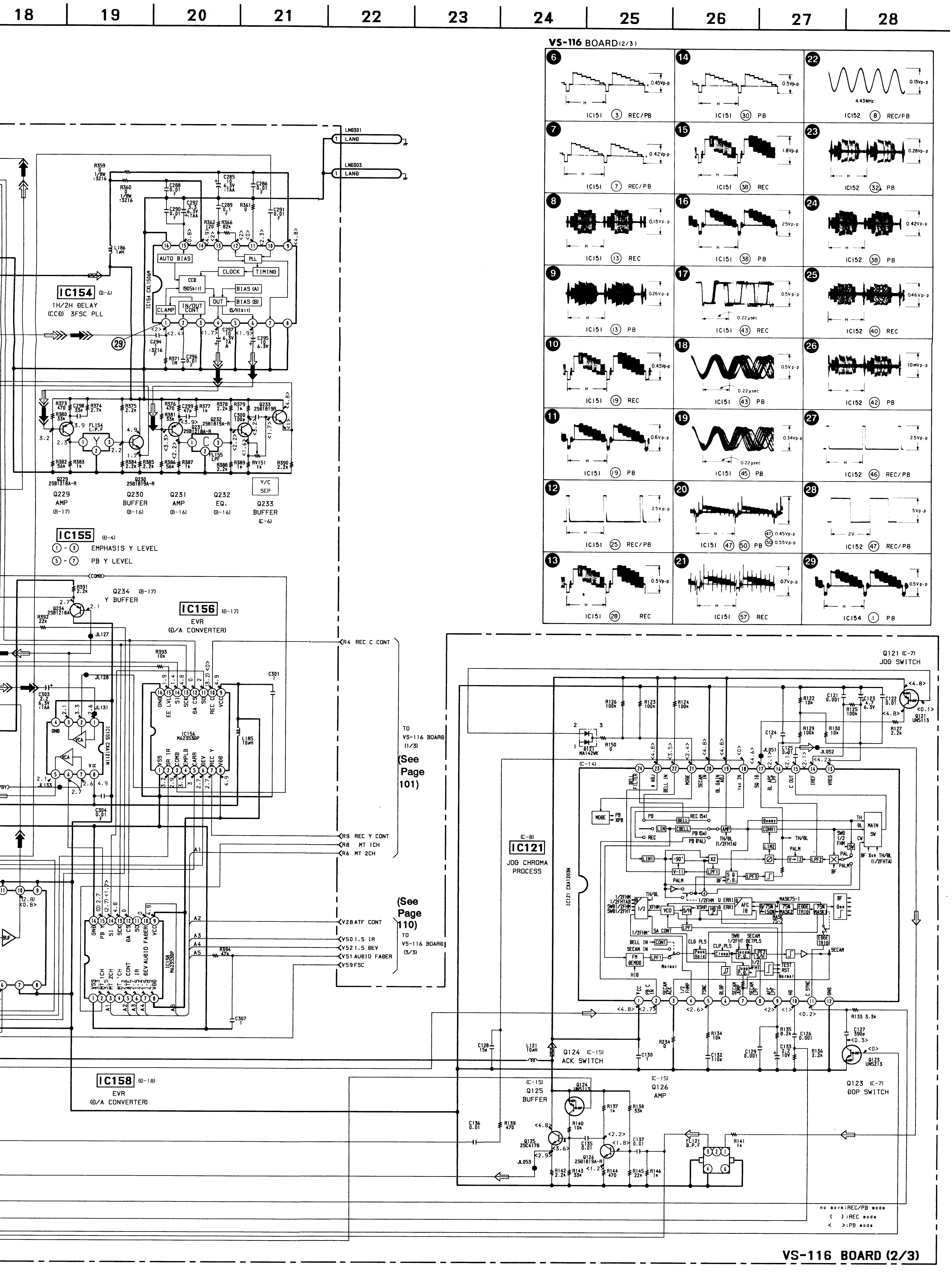
9
10
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
(See Page 117)
TO JK-99 BOARD W517
(See Page 110)
TO VS-116 BOARD (3/3)
CN101 6P (D-1)
VIDEO GND
VIDEO OUT
RF DC OUT
AUDIO GND
AUDIO L OUT
AUDIO L OUT
AUDIO 5V
VIDEO GND
VIDEO 5V
Q151, 152
CURRENT LIMITER
Q154
BUFFER
Q162, 237
SHARPNESS SW
Q158, 161
DELAY EQ.
Q166
BUFFER
Q168
INVERTER
KIKUZA
CAM Y V36
EVF UNREG V7
EVF UNREG GND V8
EVF 5V V6
TALLY V39
CAM C V37
TO VS-116 BOARD (3/3)
(See Page 110)
CN102 6P (A-1)
EVF UNREG
UNREG GND
EVF 5V
EVF GND
EVF OUT
TALLY
TO VF-42 BOARD CN501
(See Page 129)
Q175, 176
CHARACTER MIX
Q170, 196
SWITCH
Q171
PB/EE C SEL.
Q177
CHARACTER MIX
Q178
EVF BUFFER
OS VDW V5
OS VDB V4
OS ON V35
Q180, 183
OS SWITCH
TO VS-116 BOARD (3/3)
(See Page 110)
VA PB MODE V25
EDIT V19
JOG V21
REG H V33
Q182
BUFFER
Q184
BUFFER
Q189
BUFFER
Q205
DOC DET SWITCH
PB RF V47
SP/LP V27
SYNC DET V13
TO VS-116 BOARD (1/3), (3/3)
(See Page 99, 109, 110)
Q191, 192, 194
PEAKING AMP
Q195
BUFFER
Q199
PB 5V SWITCH
Q200
INVERTER
Q212
BUFFER
Q210
SWITCH
Q236
SP/LP SWITCH
Q203
REC C BUFFER
Q204
PB C AMP
IC152
CXA1208R
DEM IN R14
PB 5V R10
BUF RF R12
Y REF OUT R13
REC 5V R15
VIDEO GND R16
REC C RF R17
JOG-AND-DOC R19
TO VS-116 BOARD (1/3)
(See Page 101)
Q160, Q219, Q220
SWITCH
Q221
DOC P SWITCH
Q222, 223
BUFFER, INVERTER
EC VIDEO GND V3
V OUT SW V11
JOG VD V18
CAM/LINE V26

·SIGNAL PATH

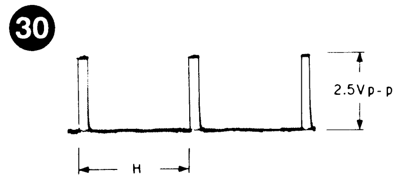
	VIDEO SIGNAL			AUDIO
	CHROMA	Y	Y/CHROMA	SIGNAL
REC	➡	➡»	➡»	
PB	⇨	⇨»	⇨»	⇨


10
11
12
13
14
15
16
17
18
19
20
21
22
(See Page 110)
TO VS-116 BOARD (3/3)
V11 V OUT SW
V18 JOG VD
V26 CAM/ LINE
V10 VI SWP
V34 VTR SYNC
V32 DATA TO SLAVE
V31 SCK
V30 VIDEO CS
V29 VIDEO D/A CS
IC151
Y PROCESS
IC151 CXA1207AR
IC152
CHROMA PROCESS
IC152 CXA1208R
IC154
1H/2H DELAY (CCD) 3FSC PLL
IC154 CXL1504M
IC155
①-③ EMPHASIS Y LEVEL
⑤-⑦ PB Y LEVEL
IC155 CXA1211M
IC156
EVR (D/A CONVERTER)
IC156 M62353GP
IC158
EVR (D/A CONVERTER)
IC158 M62353GP
IC159
CARRIER SET DEVIATION ADJ
IC159 CXA1452
Q205 DOC DET SWITCH
Q208 ACK SWITCH
Q210 SWITCH
Q212 BUFFER
Q207 CLIP LEVEL SWITCH
Q214 CLIP LEVEL SWITCH
Q229 AMP
Q230 BUFFER
Q231 AMP
Q232 EQ.
Q233 BUFFER
Q234 Y BUFFER
Q008 BUFFER
Q222, 223 BUFFER, INVERTER
Y/C SEP
FL154 L.P.F
FL155 LPF
FL152 BPF
FL153 B.P.F
X151 4.43MHz
CF151
AUTO BIAS
PLL
CLOCK
TIMING
CCD
BIAS (A)
BIAS (B)
CLAMP
IN/OUT CONT
OUT
LN0301 LAND
LN0303 LAND
R4 REC C CONT
R9 REC Y CONT
R8 MT 1CH
R6 MT 2CH
V28 ATF CONT
V50 1.5 IR
V52 1.5 DEV
V51 AUDIO FADER
V59 FSC
SR_VDB
SR_VDW
VA_PB_MODE
VD1
PBY
COMB
V_MUTE

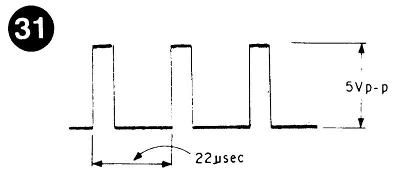

18
19
20
21
22
23
24
25
26
27
28
VS-116 BOARD(2/3)
IC151 ③ REC/PB
IC151 ㉚ PB
IC152 ⑧ REC/PB
IC151 ⑦ REC/PB
IC151 ㊳ REC
IC152 ㉜ PB
IC151 ⑬ REC
IC151 ㊱ PB
IC152 ㊳ PB
IC151 ⑬ PB
IC151 ㊸ REC
IC152 ㊵ REC
IC151 ⑲ REC
IC151 ㊸ PB
IC152 ㊷ PB
IC151 ⑲ PB
IC151 ㊺ PB
IC152 ㊻ REC/PB
IC151 ㉕ REC/PB
IC151 ㊼ ㊿ PB
IC152 ㊼ REC/PB
IC151 ㉘ REC
IC151 ㊲ REC
IC154 ① PB
4.43MHz
0.22μsec
LN0301
LN0303
LAND
IC154 (B-6)
1H/2H DELAY
(CCD) 3FSC PLL
AUTO BIAS
CLOCK
TIMING
PLL
CCD (905bit)
BIAS (A)
BIAS (B)
CLAMP
IN/OUT CONT
OUT
IC154 CXL1506M
Q229 AMP (B-17)
Q230 BUFFER (B-16)
Q231 AMP (B-16)
Q232 EQ. (B-16)
Q233 BUFFER (C-6)
Y/C SEP
FL154 L.P.F
FL155 LPF
IC155 (B-4)
①-③ EMPHASIS Y LEVEL
⑤-⑦ PB Y LEVEL
Q234 (B-17) Y BUFFER
IC156 (B-17)
EVR
(D/A CONVERTER)
IC156 M62355OP
IC155 CXA1211M
R4 REC C CONT
R9 REC Y CONT
R8 MT 1CH
R6 MT 2CH
TO VS-116 BOARD (1/3)
(See Page 101)
(See Page 110)
TO VS-116 BOARD (3/3)
V28 ATF CONT
V50 1.5 IR
V52 1.5 BEV
V51 AUDIO FADER
V59 FSC
IC158 (B-18)
EVR
(D/A CONVERTER)
IC158 M62355OP
Q121 (C-7) JOG SWITCH
Q121 MA142WK
IC121 (C-8)
JOG CHROMA PROCESS
IC121 CXA1203M
Q124 (C-15) ACK SWITCH
Q125 (C-15) BUFFER
Q126 (C-15) AMP
Q123 (C-7) DOP SWITCH
FL121 B.P.F
no mark:REC/PB mode
( ):REC mode
< >:PB mode
VS-116 BOARD (2/3)

Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

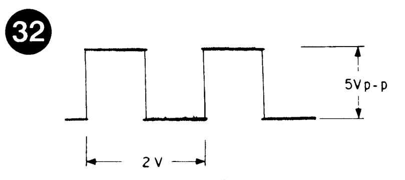
VS-116 BOARD(3/3)

㉚


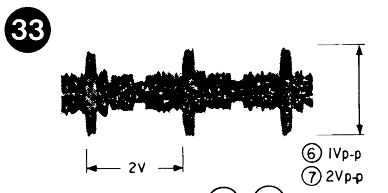
IC402 (64) REC/PB

㉛


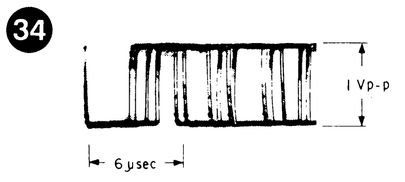
IC402 (73),(74) REC/PB

㉜


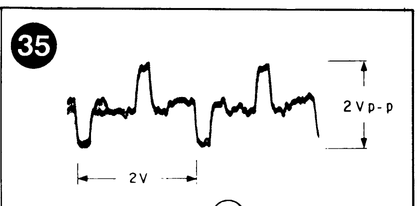
IC402 (97) REC/PB

㉝


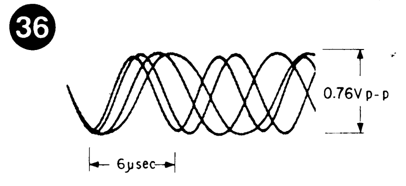
IC404 ⑥ ⑦ PB

㉞


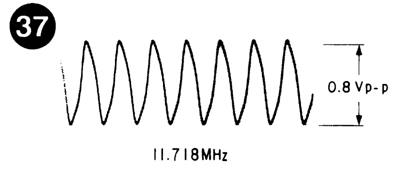
IC404 ⑨ REC/PB

㉟


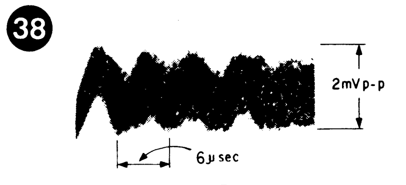
IC404 ⑮ PB

㊱


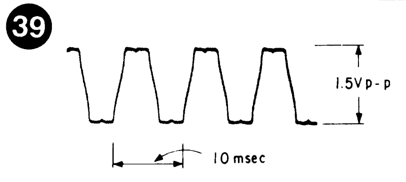
IC404 ⑱ REC

㊲


IC404 ㉓ REC/PB

㊳


IC404 ㊽ PB

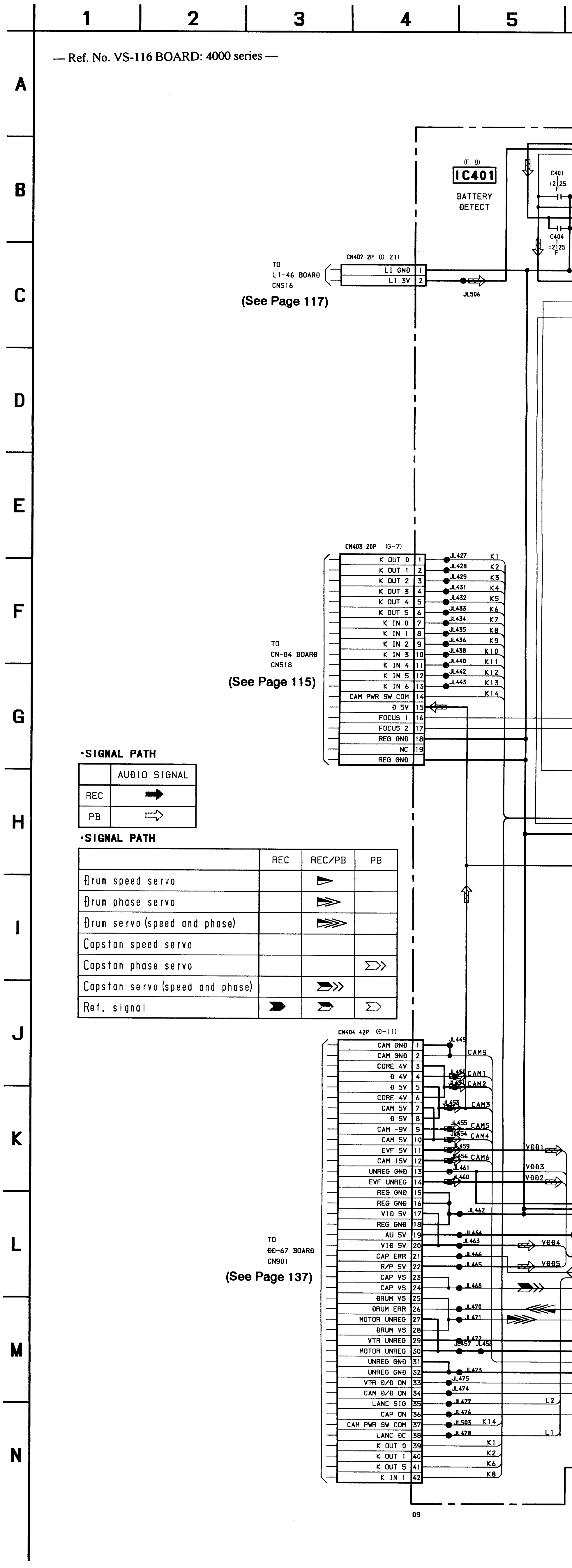
㊴


IC408 ⑭,⑯,⑱ REC/PB

VS-116 (SERVO, SYSTEM CONTROL) SCHEMATIC DIAGRAM

• Refe

— Ref. No. VS-116 BOARD: 4000 series —


1
2
3
4
5
A
B
C
D
E
F
G
H
I
J
K
L
M
N
(F-8)
IC401
BATTERY DETECT
C401
C404
TO L1-46 BOARD CN516
(See Page 117)
CN407 2P (G-21)
L1 GND 1
L1 3V 2
JL506
CN403 20P (G-7)
K OUT 0 1
K OUT 1 2
K OUT 2 3
K OUT 3 4
K OUT 4 5
K OUT 5 6
K IN 0 7
K IN 1 8
K IN 2 9
K IN 3 10
K IN 4 11
K IN 5 12
K IN 6 13
CAM PWR SW COM 14
D 5V 15
FOCUS 1 16
FOCUS 2 17
REG GND 18
NC 19
REG GND
K1
K2
K3
K4
K5
K6
K7
K8
K9
K10
K11
K12
K13
K14
TO CN-84 BOARD CN518
(See Page 115)
CN404 42P (D-11)
CAM GND 1
CAM GND 2
CORE 4V 3
D 4V 4
D 5V 5
CORE 4V 6
CAM 5V 7
D 5V 8
CAM -9V 9
CAM 5V 10
EVF 5V 11
CAM 15V 12
UNREG GND 13
EVF UNREG 14
REG GND 15
REG GND 16
VID 5V 17
REG GND 18
AU 5V 19
VID 5V 20
CAP ERR 21
R/P 5V 22
CAP VS 23
CAP VS 24
DRUM VS 25
DRUM ERR 26
MOTOR UNREG 27
DRUM VS 28
VTR UNREG 29
MOTOR UNREG 30
UNREG GND 31
UNREG GND 32
VTR D/D ON 33
CAM D/D ON 34
LANC SIG 35
CAP ON 36
CAM PWR SW COM 37
LANC DC 38
K OUT 0 39
K OUT 1 40
K OUT 5 41
K IN 1 42
CAM9
CAM1
CAM2
CAM3
CAM5
CAM4
CAM6
VDD1
VDD3
VDD2
VDD4
VDD5
L2
L1
TO DD-67 BOARD CN901
(See Page 137)
09

·SIGNAL PATH

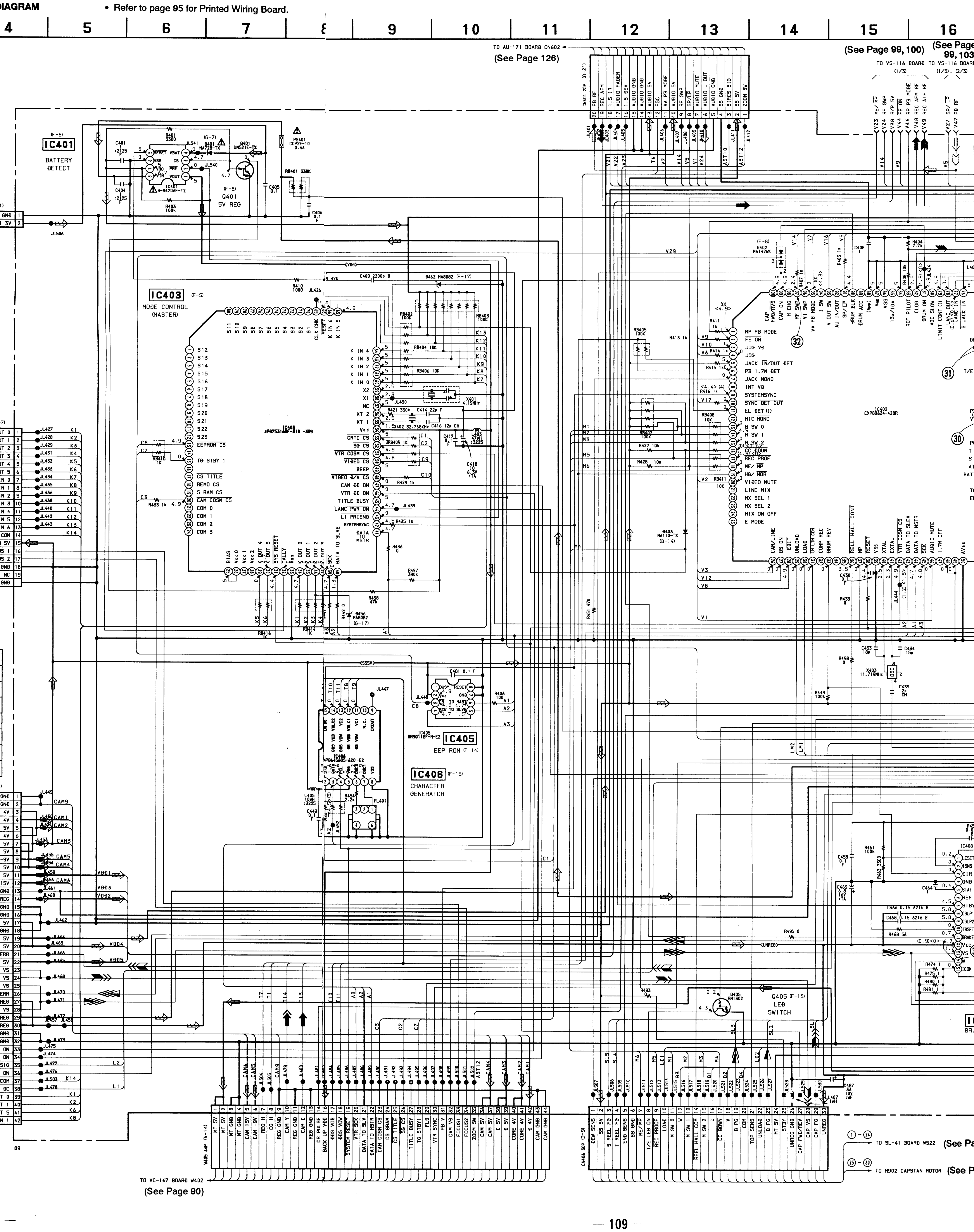
	AUDIO SIGNAL
REC	➡
PB	⇨

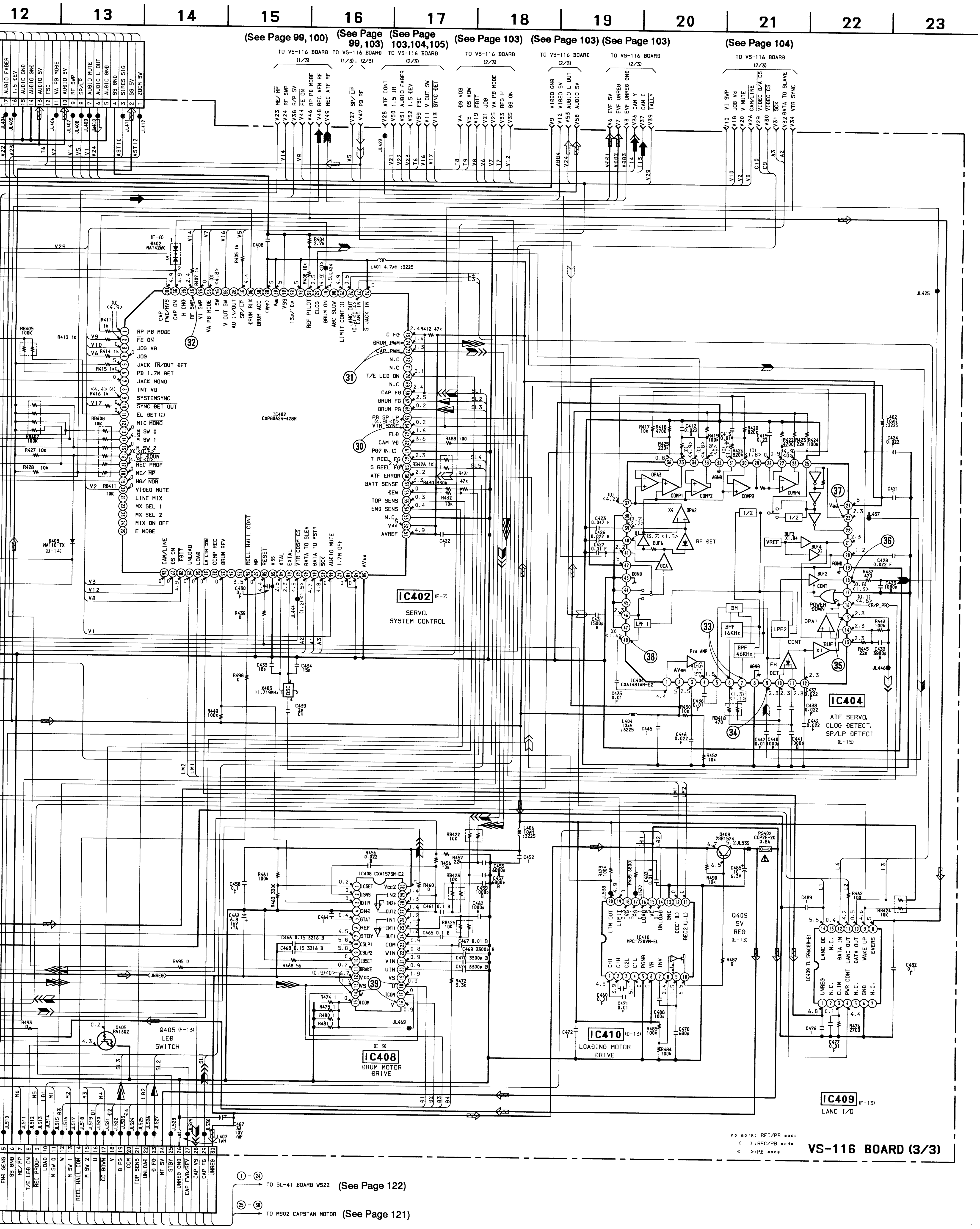
·SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷>	
Drum servo (speed and phase)		▷>>	
Capstan speed servo			
Capstan phase servo			⟩⟩
Capstan servo (speed and phase)		➤⟩⟩	
Ref. signal	➤	➤	⟩

DIAGRAM

• Refer to page 95 for Printed Wiring Board.

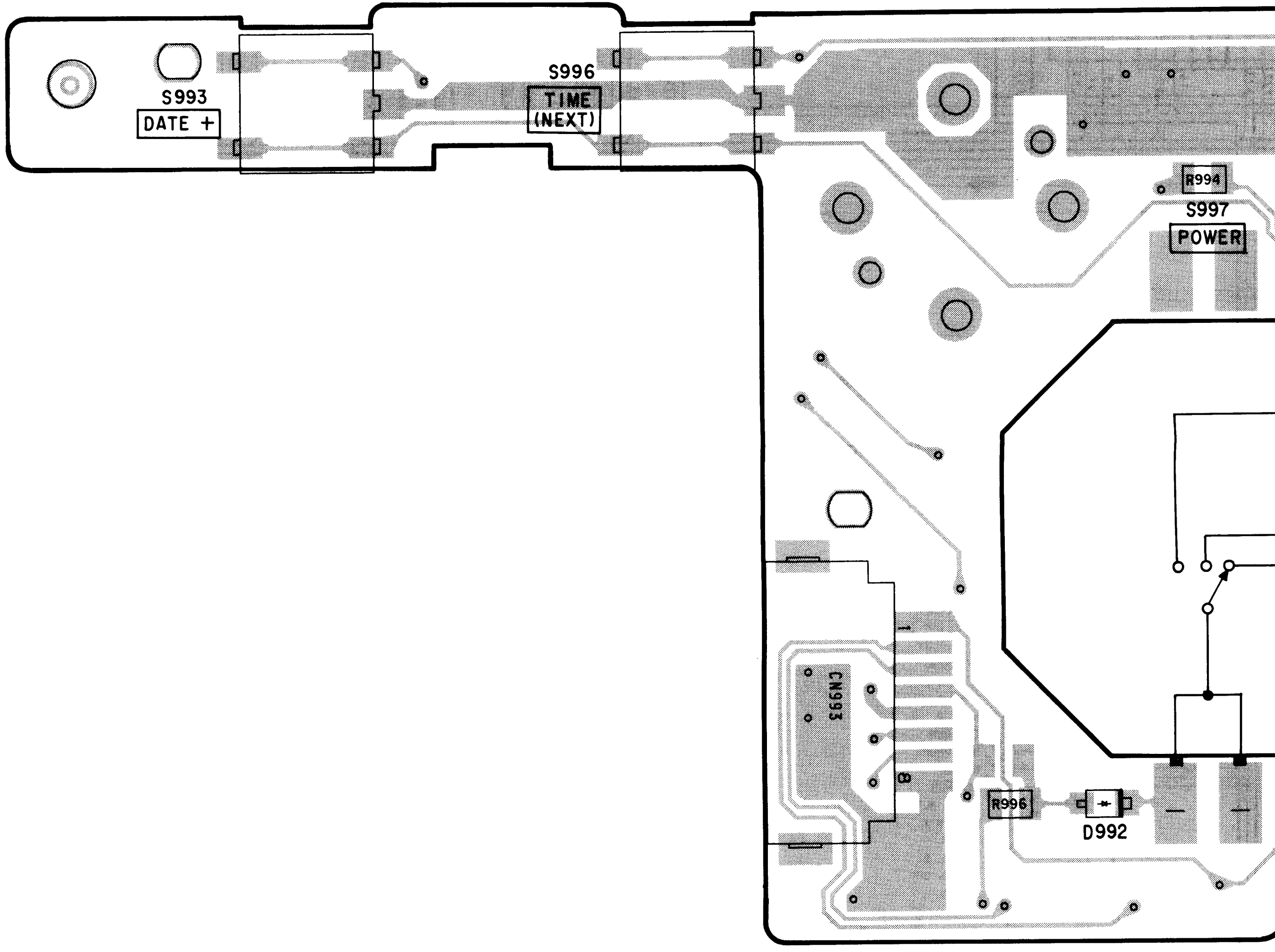

4
5
6
7
8
9
10
11
12
13
14
15
16
TO AU-171 BOARD CN602
(See Page 126)
(See Page 99, 100)
(See Page 99, 103
TO VS-116 BOARD (1/3)
TO VS-116 BOARD (1/3), (2/3)
CN401 20P (D-21)
IC401 (F-8)
BATTERY DETECT
Q401 (F-8)
5V REG
PS401 CCP2E-10 0.4A
IC403 (F-5)
MODE CONTROL (MASTER)
IC403 μPD75316GF-318-3B9
X401 4.19MHz
IC402 CXP80624-428R
IC405 EEP ROM (F-14)
IC406 (F-15)
CHARACTER GENERATOR
Q405 (F-13)
LED SWITCH
X403 11.719MHz
W405 44P (A-14)
CN406 30P (G-9)
TO VC-147 BOARD W402
(See Page 90)
①-㉔ TO SL-41 BOARD W522 (See Pa
㉕-㉚ TO M902 CAPSTAN MOTOR (See P

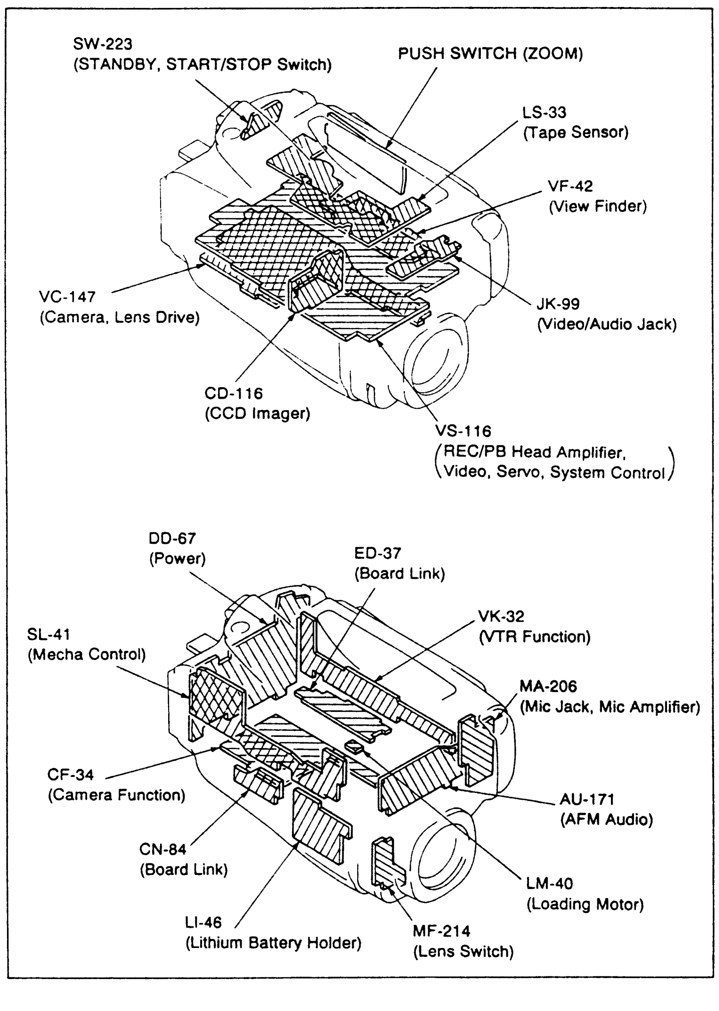

12
13
14
15
16
17
18
19
20
21
22
23
(See Page 99, 100)
(See Page 99, 103)
(See Page 103, 104, 105)
(See Page 103)
(See Page 103)
(See Page 103)
(See Page 104)
TO VS-116 BOARD (1/3)
TO VS-116 BOARD (1/3), (2/3)
TO VS-116 BOARD (2/3)
IC402 CXP80624-428R
IC402 (E-7) SERVO, SYSTEM CONTROL
IC404 CXA1481AR-E2
IC404 (E-15) ATF SERVO, CLOG DETECT, SP/LP DETECT
IC408 CXA1575N-E2
IC408 (E-9) DRUM MOTOR DRIVE
IC410 MPC1720VM-EL
IC410 (D-13) LOADING MOTOR DRIVE
IC409 TL1596CBD-E1
IC409 (F-13) LANC I/O
Q409 2SB1574
Q409 5V REG (E-13)
Q405 RN1302
Q405 (F-13) LED SWITCH
X403 11.719MHz
no mark: REC/PB mode
( ): REC/PB mode
< >: PB mode
VS-116 BOARD (3/3)
①-㉔ TO SL-41 BOARD W522 (See Page 122)
㉕-㉚ TO M902 CAPSTAN MOTOR (See Page 121)

CF-34 (CAMERA FUNCTION), CN-84 (BOARD LINK), ED-37 (BOARD LINK), MF-214 (LENS SWITCH), VK-

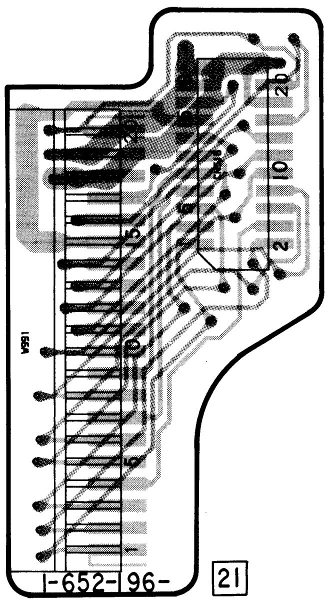
— Ref. No. JK-99 BOARD: 3000 series, LI-46 BOARD: 4000 series, MF-214 BOARD: 5000 series, CN-84 BOARD: 6000 series, CF-34 BOARD: 700

CF-34 BOARD (COMPONENT SIDE)

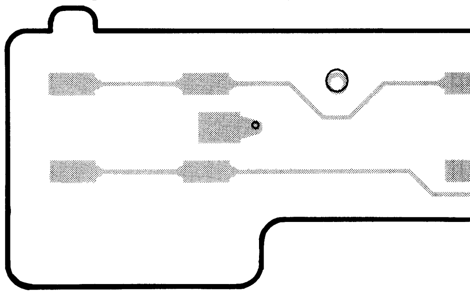

S993
DATE +
S996
TIME
(NEXT)
R994
S997
POWER
CN993
1
8
R996
D992


SW-223
(STANDBY, START/STOP Switch)
PUSH SWITCH (ZOOM)
LS-33
(Tape Sensor)
VF-42
(View Finder)
VC-147
(Camera, Lens Drive)
JK-99
(Video/Audio Jack)
CD-116
(CCD Imager)
VS-116
(REC/PB Head Amplifier, Video, Servo, System Control)
DD-67
(Power)
ED-37
(Board Link)
SL-41
(Mecha Control)
VK-32
(VTR Function)
MA-206
(Mic Jack, Mic Amplifier)
CF-34
(Camera Function)
AU-171
(AFM Audio)
CN-84
(Board Link)
LM-40
(Loading Motor)
LI-46
(Lithium Battery Holder)
MF-214
(Lens Switch)

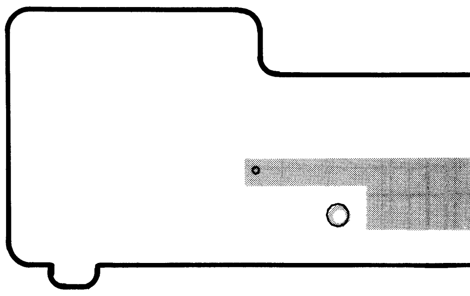
CN-84 BOARD
(CONDUCTOR SIDE)


1
5
10
15
20
2
10
20
1-652-96-
21

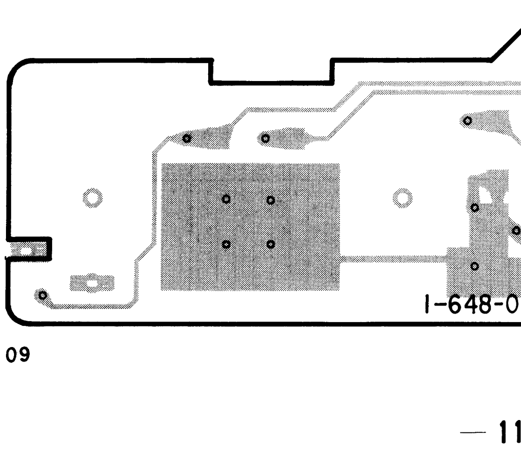
VK-32 BOARD (COMPONENT



VK-32 BOARD (CONDUCTOR



JK-99 BOARD (COMPONENT SI

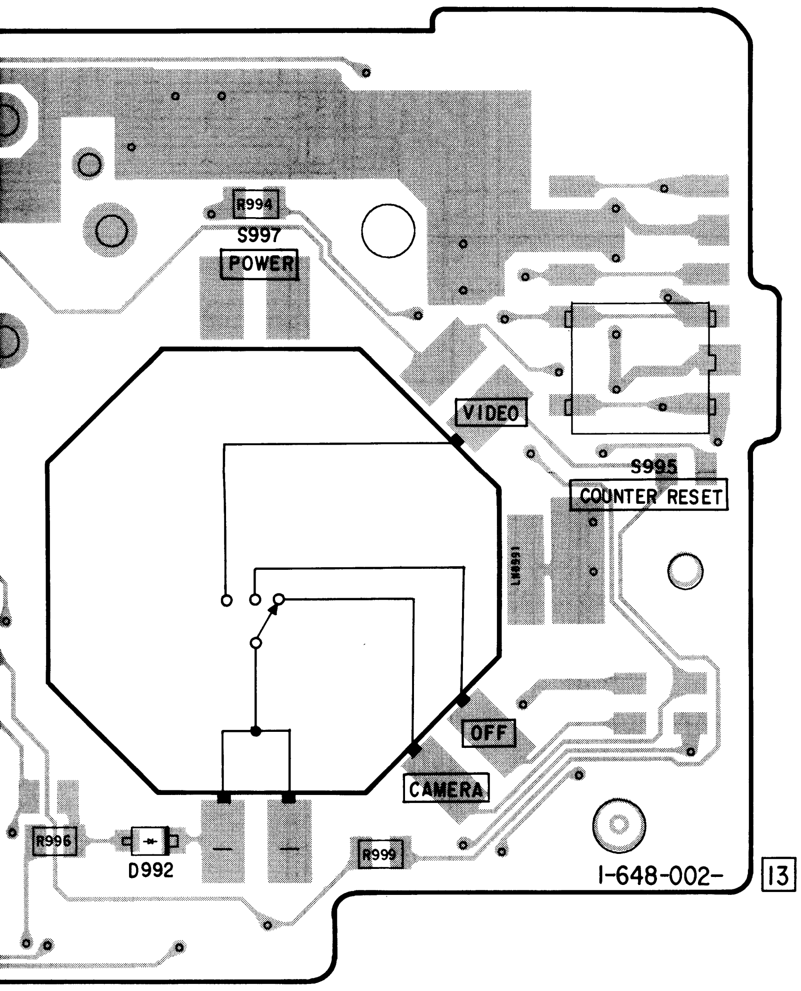


- **For printed wiring boards.**
  (CN-84, ED-37, LI-46 and MF-214 boards)
- ○— : indicated a lead wire mounted on the component side.
- —— : indicated a lead wire mounted on the conductor side.
- ○ : Through hole.
- ▒ : Pattern from the side which enables seeing.
- ░ : Pattern of the rear side.

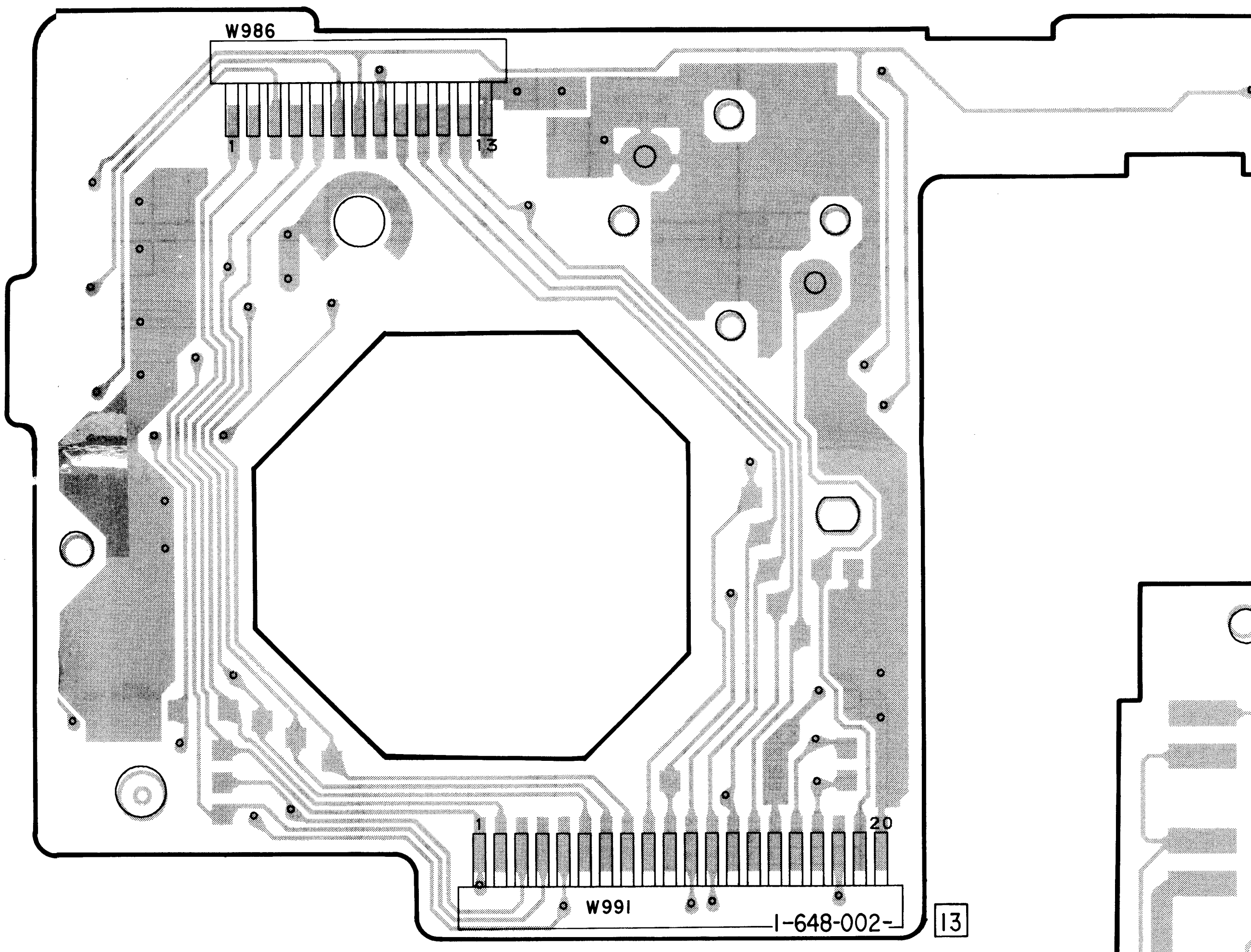
(The other layers'patterns are not indicated.)

F-214 (LENS SWITCH), VK-32 (VTR FUNCTION), JK-99 (VIDEO/AUDIO JACK), L6 (LITHIUM BATTERY HOLDER) PRINTED WIRING BOARDS

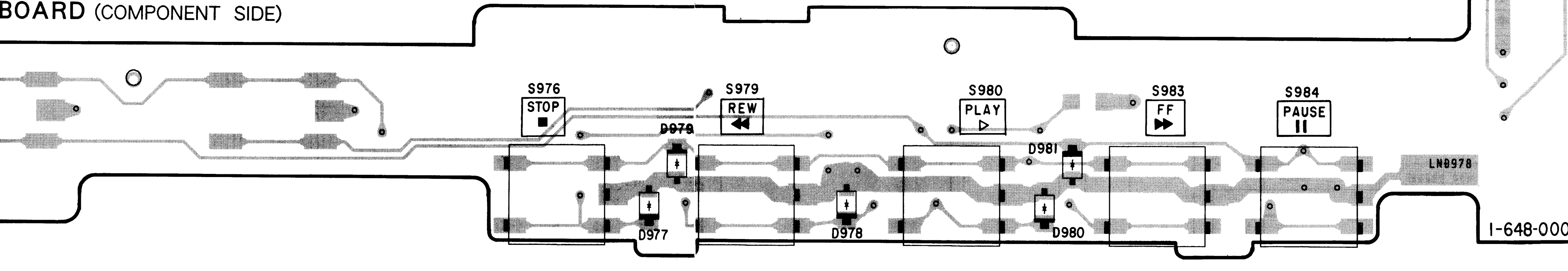
RD: 6000 series, CF-34 BOARD: 7000 series, ED-37 BOARD: 8000 series, VK-32 BOARD: 9000 series —


R994
S997
POWER
VIDEO
S995
COUNTER RESET
LN6991
OFF
CAMERA
R996
D992
R999
1-648-002-
13

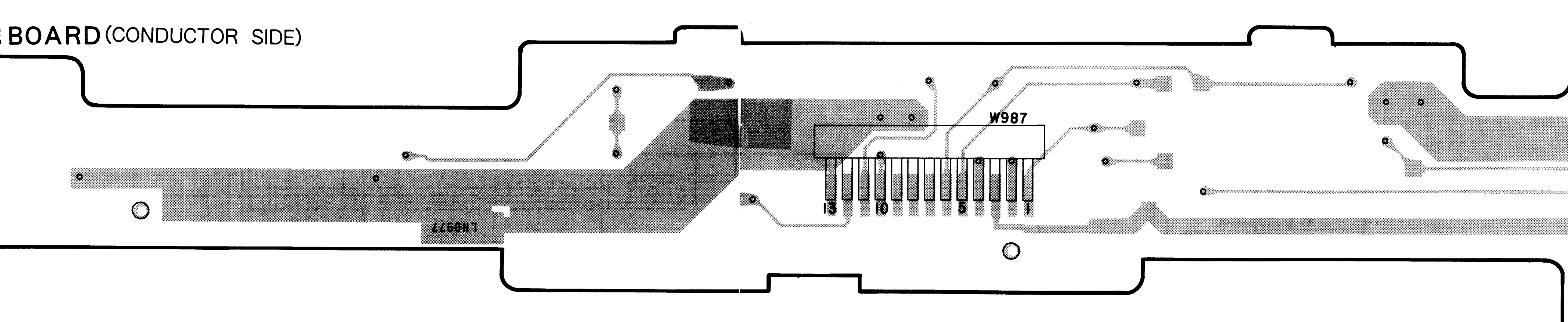
F-34 BOARD (CONDUCTOR SIDE)

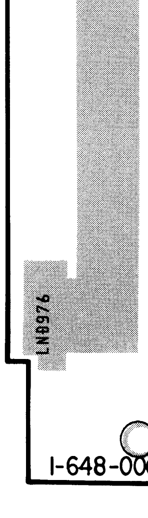

W986
1
13
1
20
W991
1-648-002-
13

BOARD (COMPONENT SIDE)

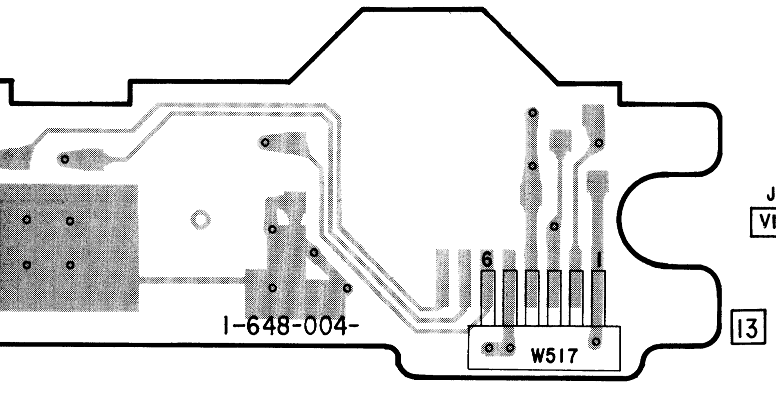

S976
STOP
■
S979
REW
◀◀
S980
PLAY
▷
S983
FF
▶▶
S984
PAUSE
II
D979
D981
LN8978
D977
D978
D980
1-648-000

BOARD (CONDUCTOR SIDE)

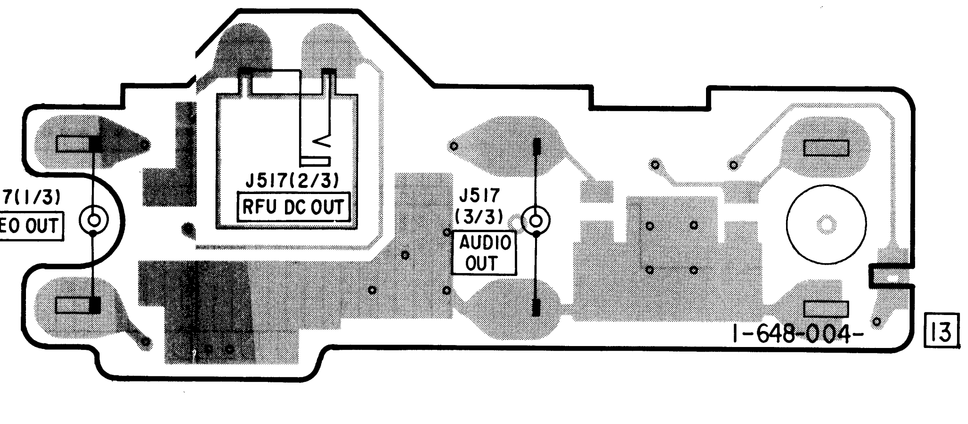

W987
13
10
5
1
LN6977

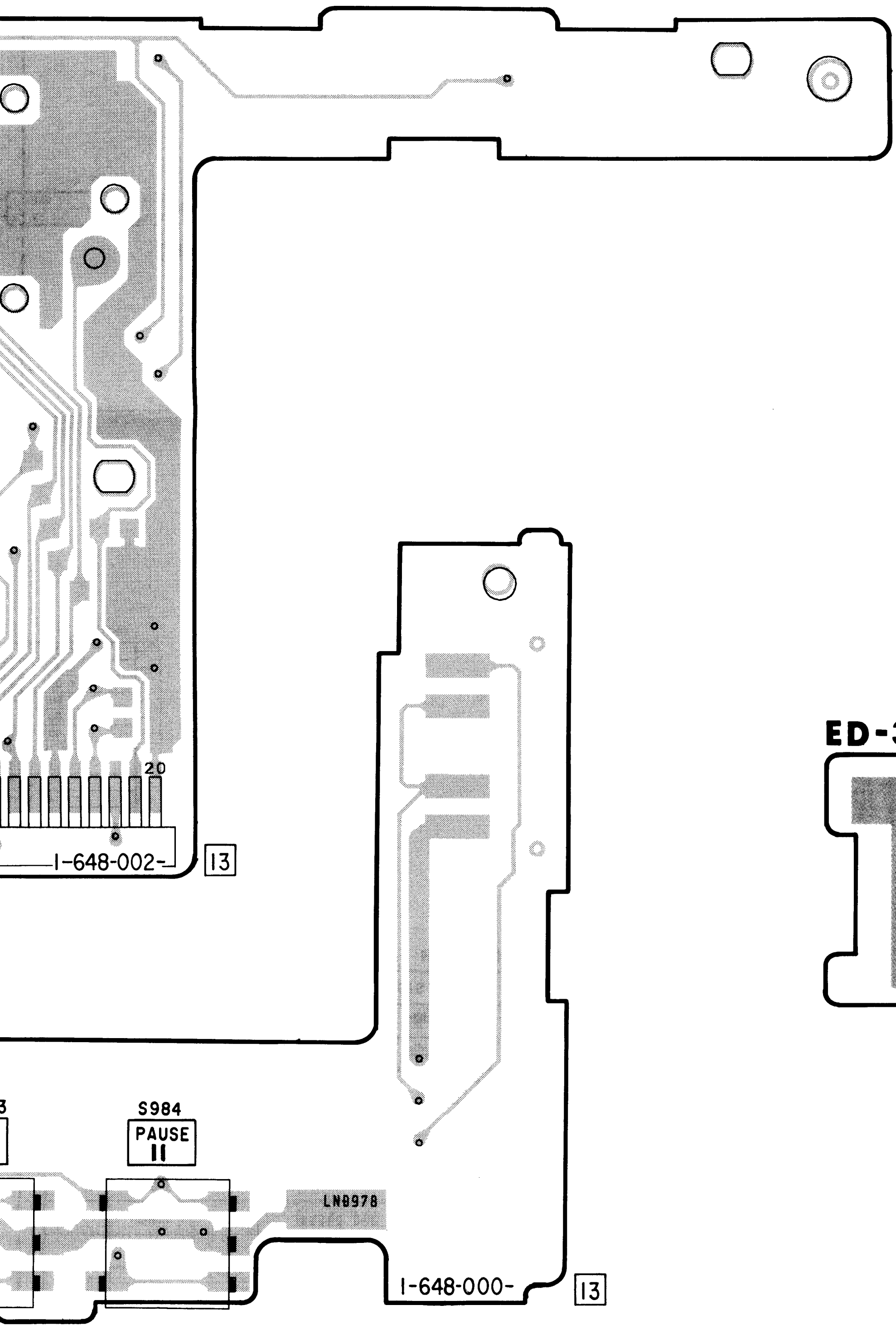

LN8976
1-648-00

ARD (COMPONENT SIDE)

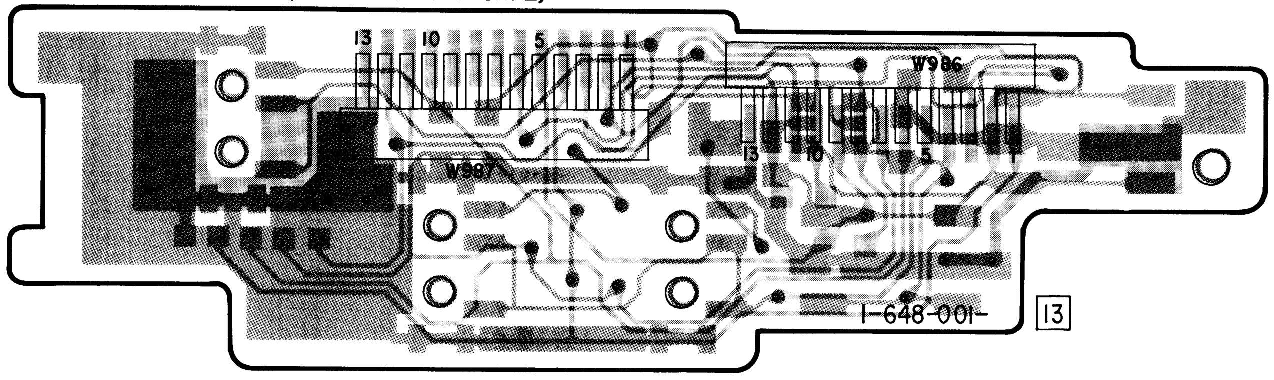

6
1
1-648-004-
W517
13

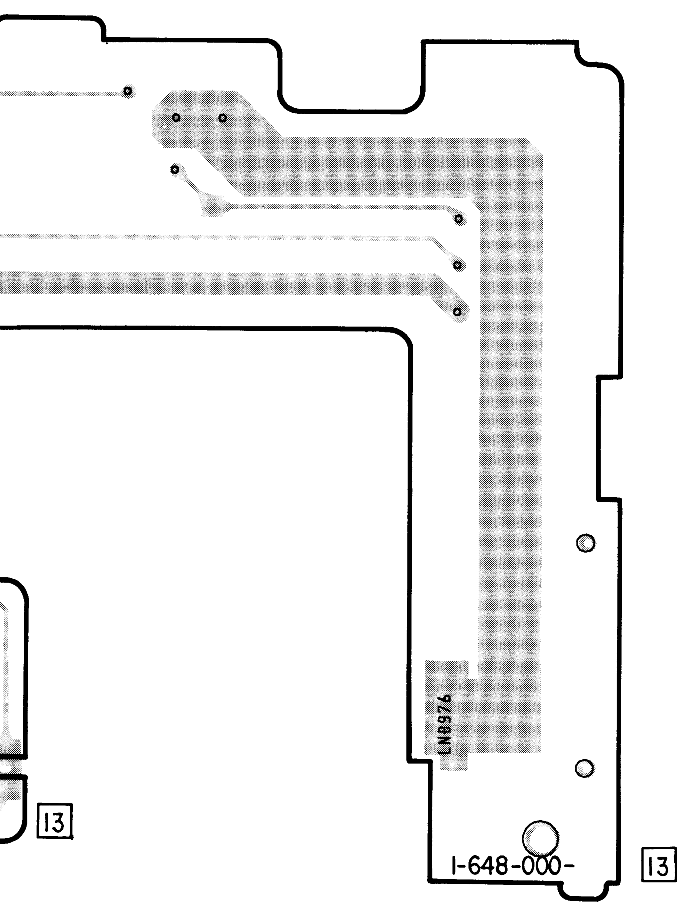
JK-99 BOARD (CONDUCTOR SIDE)


J517(1/3)
VIDEO OUT
J517(2/3)
RFU DC OUT
J517
(3/3)
AUDIO
OUT
1-648-004-
13

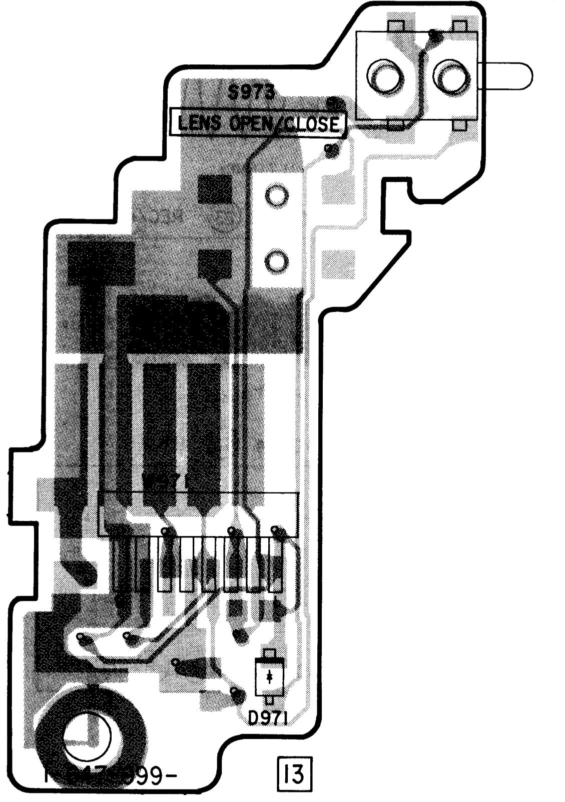

20
1-648-002-
13
S984
PAUSE
II
LN8978
1-648-000-
13

ED-37 BOARD (CONDUCTOR SIDE)

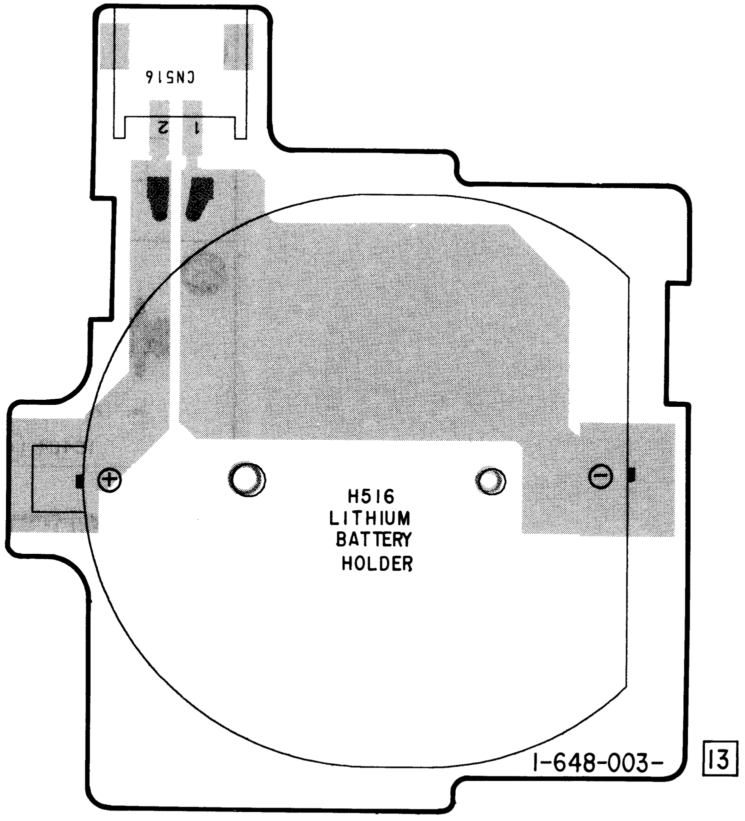

13
10
5
1
W986
W987
13
10
5
1-648-001-
13


LN8976
13
1-648-000-
13

MF-214 BOARD (CONDUCTOR SIDE)

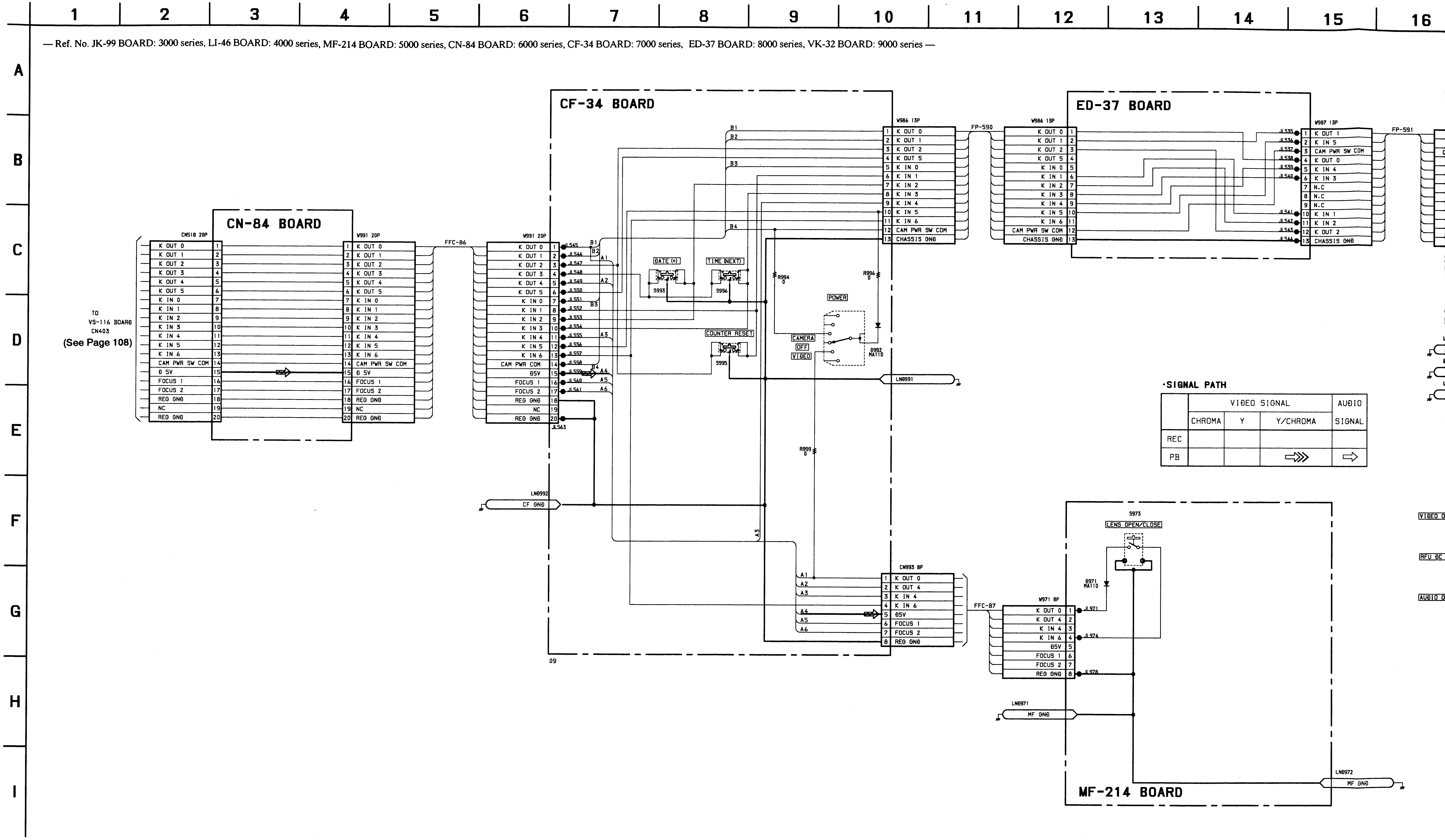

S973
LENS OPEN/CLOSE
D971
1-647-999-
13

LI-46 BOARD (CONDUCTOR SIDE)


CN516
2
1
⊕
⊖
H516
LITHIUM
BATTERY
HOLDER
1-648-003-
13

CF-34 (CAMERA FUNCTION), CN-84 (BOARD LINK), ED-37 (BOARD LINK), MF-214 (LENS SWITCH), VK-32 (VTR FUNCTION), JK-99 (VIDEO/AUDIO JACK), LI-46 (LITHIUM BATTERY HOLDER) SCHEMATIC DIAGRAM

— Ref. No. JK-99 BOARD: 3000 series, LI-46 BOARD: 4000 series, MF-214 BOARD: 5000 series, CN-84 BOARD: 6000 series, CF-34 BOARD: 7000 series, ED-37 BOARD: 8000 series, VK-32 BOARD: 9000 series —



1
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8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
CN-84 BOARD
CF-34 BOARD
ED-37 BOARD
MF-214 BOARD
CN518 20P
W991 20P
W986 13P
W987 13P
CN993 8P
W971 8P
FFC-86
FFC-87
FP-590
FP-591
TO VS-116 BOARD CN403
(See Page 108)
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
CAM PWR SW COM
CAM PWR COM
Ð 5V
FOCUS 1
FOCUS 2
REG GND
NC
N.C
CHASSIS GND
DATE (+)
TIME (NEXT)
COUNTER RESET
POWER
CAMERA
OFF
VIDEO
S993
S996
S995
R994 0
R996 0
R999 0
D992 MA110
LN0991
LN0992
CF GND
LN0971
LN0972
MF GND
S973
LENS OPEN/CLOSE
D971 MA110
JL563
09
VIDEO O
RFU DC
AUDIO O

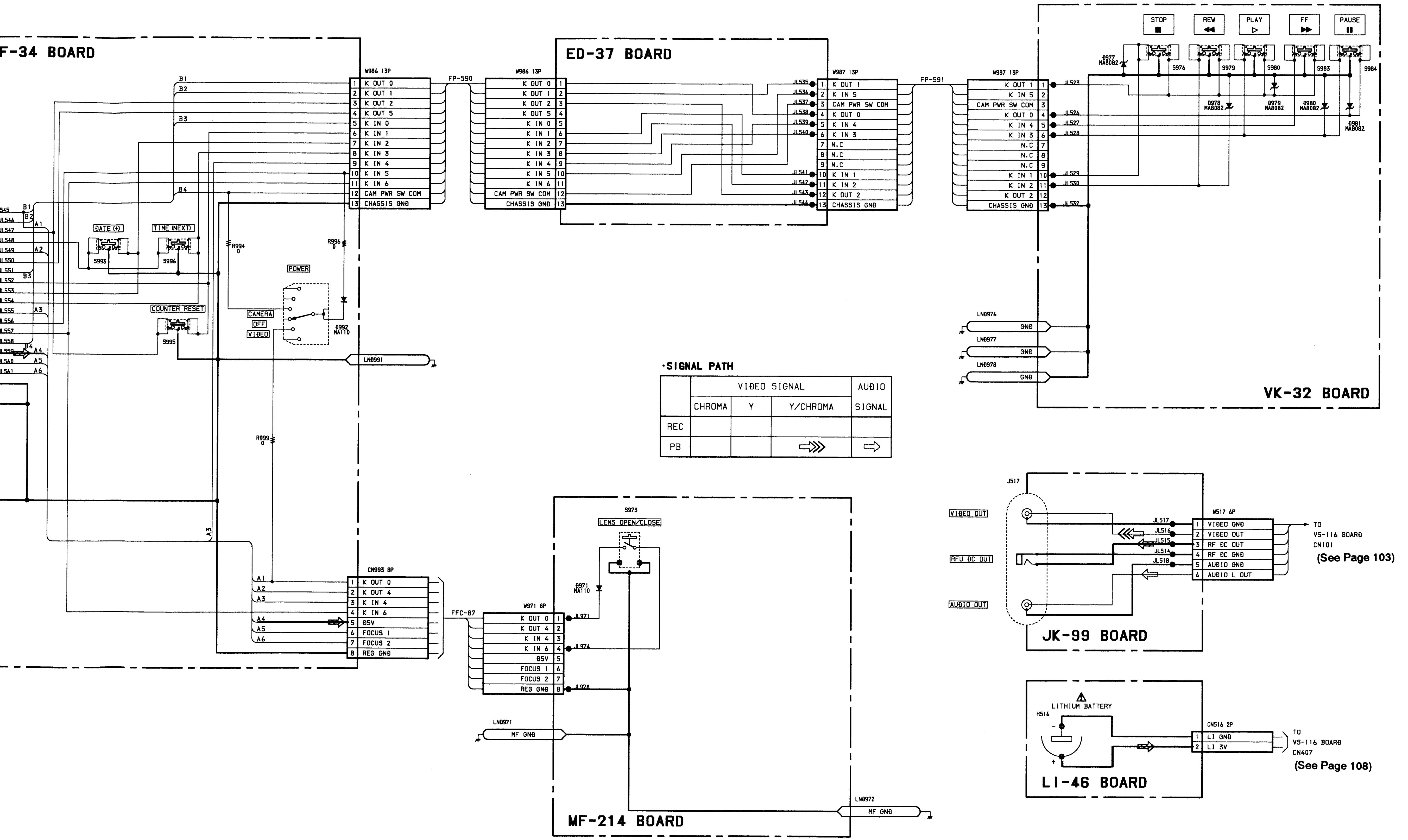
·SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB			⇨⟫	⇨

ITCH), VK-32 (VTR FUNCTION), JK-99 (VIDEO/AUDIO JACK), LI-46 (LITHIUM BATTERY HOLDER) SCHEMATIC DIAGRAM

7	8	9	10	11	12	13	14	15	16	17	18	19	20

CF-34 BOARD: 7000 series, ED-37 BOARD: 8000 series, VK-32 BOARD: 9000 series —

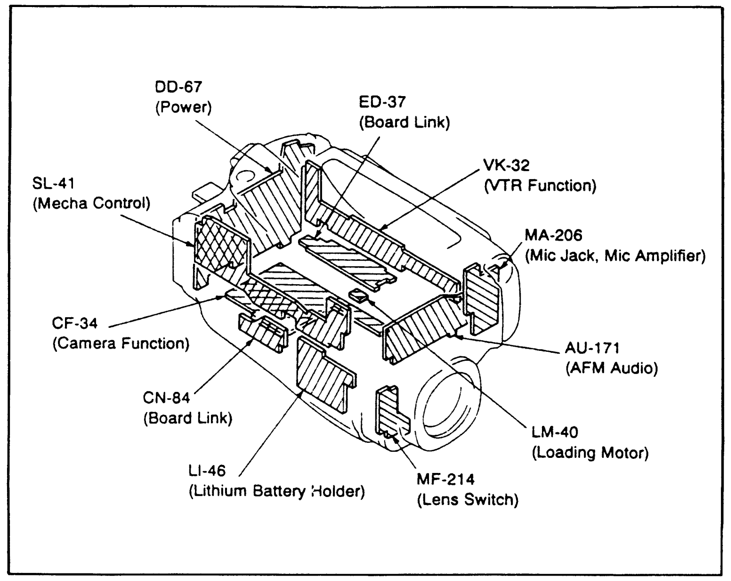

F-34 BOARD
ED-37 BOARD
VK-32 BOARD
MF-214 BOARD
JK-99 BOARD
LI-46 BOARD
W986 13P
FP-590
W987 13P
FP-591
K OUT 0
K OUT 1
K OUT 2
K OUT 5
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
CAM PWR SW COM
CHASSIS GND
N.C
STOP
REW
PLAY
FF
PAUSE
S976
S979
S980
S983
S984
D977 MA8082
D978 MA8082
D979 MA8082
D980 MA8082
D981 MA8082
DATE (+)
TIME (NEXT)
COUNTER RESET
S993
S996
S995
POWER
CAMERA
OFF
VIDEO
D992 MA110
R994 0
R996 0
R999 0
LN8991
LN8976
LN8977
LN8978
GND
CN993 8P
FFC-87
W971 8P
05V
FOCUS 1
FOCUS 2
REG GND
S973
LENS OPEN/CLOSE
D971 MA110
LN8971
LN8972
MF GND
J517
VIDEO OUT
RFU DC OUT
AUDIO OUT
W517 6P
VIDEO GND
RF DC OUT
RF DC GND
AUDIO GND
AUDIO L OUT
TO VS-116 BOARD CN101
(See Page 103)
LITHIUM BATTERY
H516
CN516 2P
LI GND
LI 3V
TO VS-116 BOARD CN407
(See Page 108)

·SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB			⇨⋙	⇨

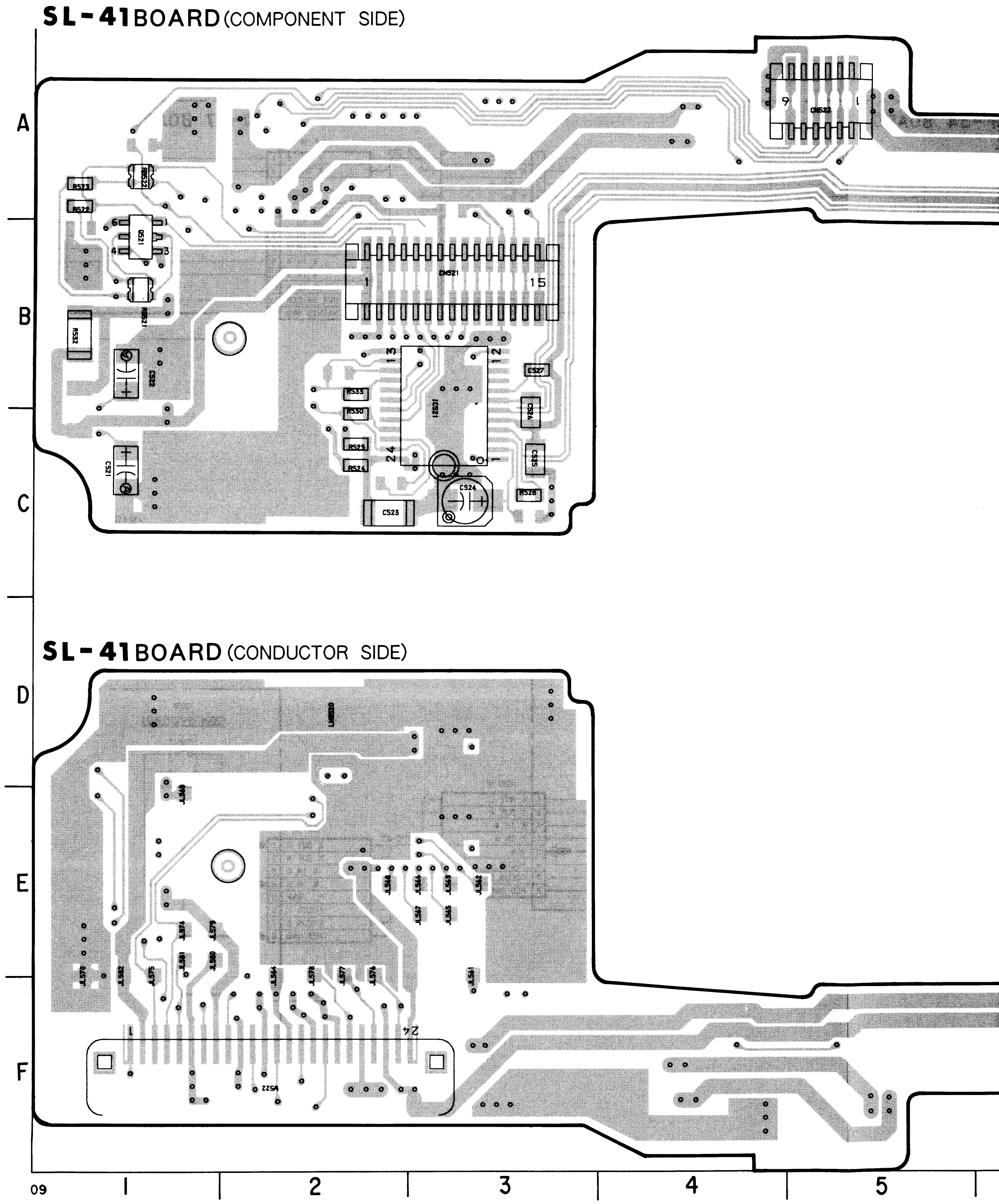
Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

- Printed wiring boards of FP-442, LM-40 and LS-33 boards are omitted.


DD-67
(Power)
ED-37
(Board Link)
VK-32
(VTR Function)
SL-41
(Mecha Control)
MA-206
(Mic Jack, Mic Amplifier)
CF-34
(Camera Function)
AU-171
(AFM Audio)
CN-84
(Board Link)
LM-40
(Loading Motor)
LI-46
(Lithium Battery Holder)
MF-214
(Lens Switch)

SL-41 (MECHA CONTROL) PRINTED WIRING BOARD

— Ref. No. SL-41 BOARD: 5000 series —


SL-41 BOARD (COMPONENT SIDE)
SL-41 BOARD (CONDUCTOR SIDE)
A
B
C
D
E
F
09
1
2
3
4
5
CN522
CN521
IC531
Q521
R523
R522
R532
C532
C521
C527
R533
R530
R525
R524
C523
C524
C526
C525
R528
15
12
13
24

-33 boards are

on)

6
ack, Mic Amplifier)

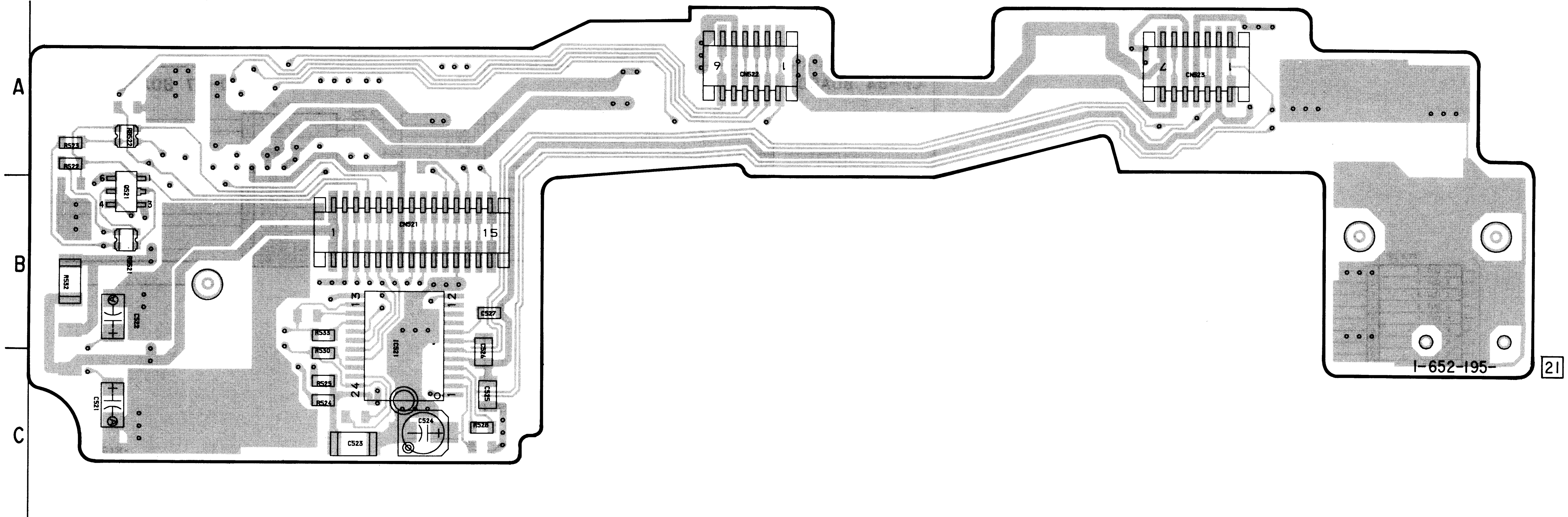
AU-171
AFM Audio)

0
ing Motor)

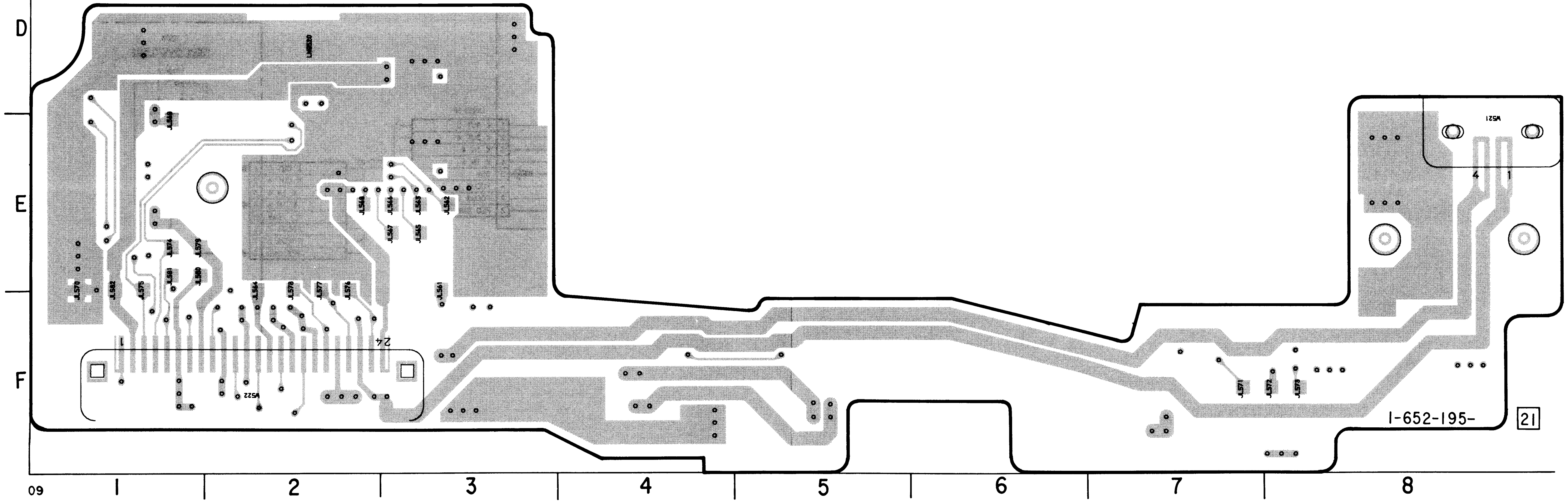
SL-41 (MECHA CONTROL) PRINTED WIRING BOARD

— Ref. No. SL-41 BOARD: 5000 series —

SL-41 BOARD (COMPONENT SIDE)

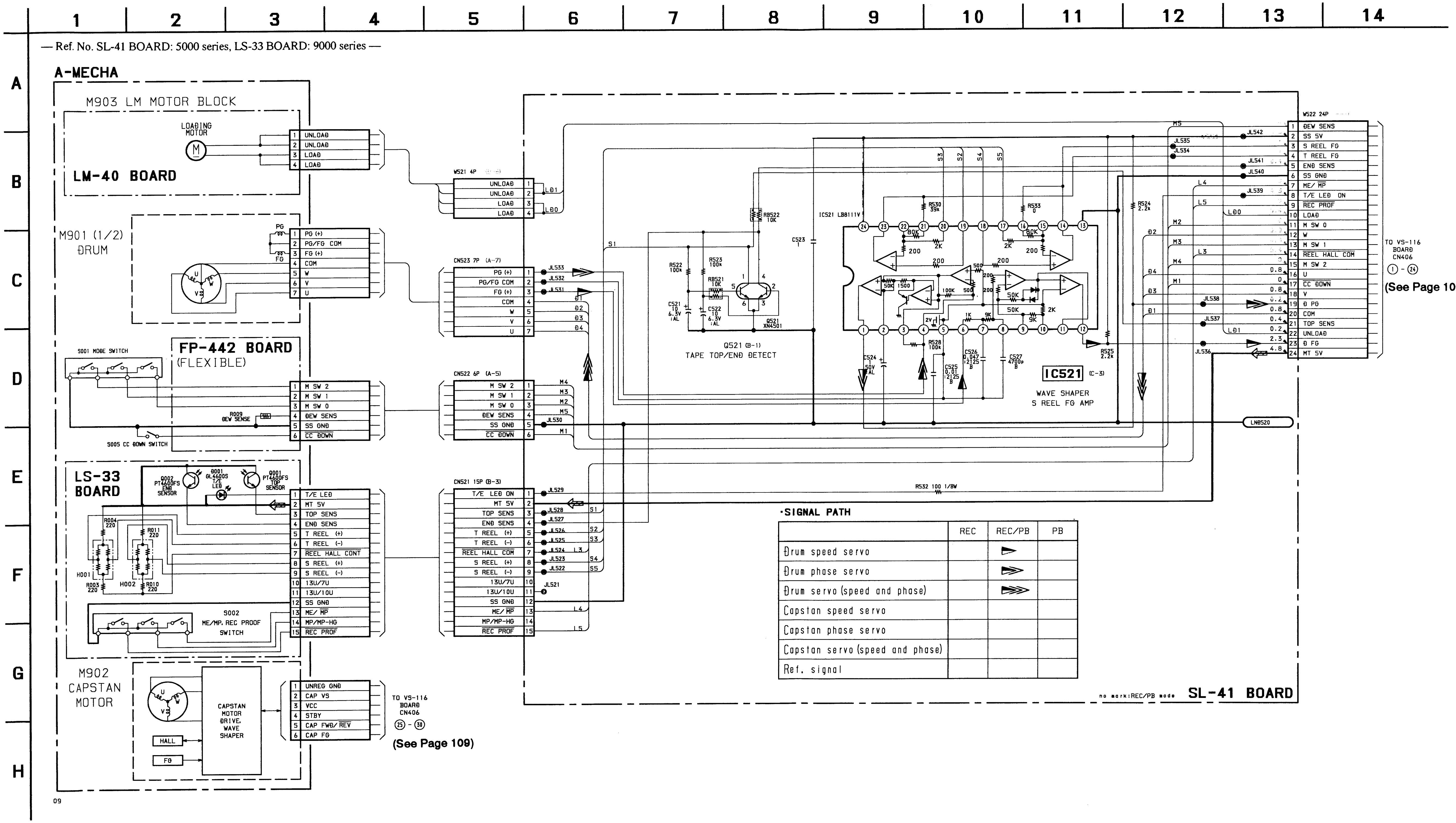

A
B
C
R523
R522
IC521
R532
C522
C521
IC531
CN521
1
15
13
12
24
R533
R530
R525
R524
C523
C524
C525
C526
C527
R528
CN522
9
1
CN523
1-652-195-
21

SL-41 BOARD (CONDUCTOR SIDE)


D
E
F
1
24
VS21
VS22
4
1
1-652-195-
21
09
1
2
3
4
5
6
7
8

SL-41 (MECHA CONTROL), FP-442 (MODE SWITCH), LM-40 (LOADING MOTOR), LS-33 (TAPE SENSOR) SCHEMATIC DIAGRAM

— Ref. No. SL-41 BOARD: 5000 series, LS-33 BOARD: 9000 series —


1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H
A-MECHA
M903 LM MOTOR BLOCK
LOADING MOTOR
LM-40 BOARD
UNLOAD
LOAD
W521 4P
L01
L00
M901 (1/2) DRUM
PG
FG
PG (+)
PG/FG COM
FG (+)
COM
W
V
U
CN523 7P (A-7)
Q1
Q2
Q3
Q4
S001 MODE SWITCH
FP-442 BOARD (FLEXIBLE)
M SW 2
M SW 1
M SW 0
DEW SENS
SS GND
CC DOWN
R009 DEW SENSE
S005 CC DOWN SWITCH
CN522 6P (A-5)
M1
M2
M3
M4
M5
LS-33 BOARD
Q002 PT4600FS END SENSOR
D001 GL4600S T/E LED
Q001 PT4600FS TOP SENSOR
H001
H002
R003 220
R004 220
R010 220
R011 220
S002 ME/MP, REC PROOF SWITCH
T/E LED
MT 5V
TOP SENS
END SENS
T REEL (+)
T REEL (-)
REEL HALL CONT
S REEL (+)
S REEL (-)
13V/7U
13U/10U
SS GND
ME/ MP
MP/MP-HG
REC PROF
CN521 15P (B-3)
T/E LED ON
REEL HALL COM
S1
S2
S3
S4
S5
L3
L4
L5
M902 CAPSTAN MOTOR
HALL
FG
CAPSTAN MOTOR DRIVE, WAVE SHAPER
UNREG GND
CAP VS
VCC
STBY
CAP FWD/ REV
CAP FG
TO VS-116 BOARD CN406
㉕-㉚
(See Page 109)
R522 100k
R523 100k
RB521 10K
RB522 10K
C521 10 6.3V :AL
C522 10 6.3V :AL
Q521 XN4501
Q521 (B-1) TAPE TOP/END DETECT
C523 1
IC521 LB8111V
R530 39k
R533 0
IC521 (C-3)
WAVE SHAPER S REEL FG AMP
C524 1 50V :AL
R528 100k
C525 0.01 :2125 B
C526 0.047 :2125 B
C527 4700p B
R524 2.2k
R525 2.2k
R532 100 1/8W
LND520
W522 24P
DEW SENS
SS 5V
S REEL FG
T REEL FG
END SENS
SS GND
ME/ MP
T/E LED ON
REC PROOF
LOAD
M SW 0
W
M SW 1
REEL HALL COM
M SW 2
U
CC DOWN
V
D PG
COM
TOP SENS
UNLOAD
D FG
MT 5V
TO VS-116 BOARD CN406
①-㉔
(See Page 109)
SL-41 BOARD
no mark:REC/PB mode
09

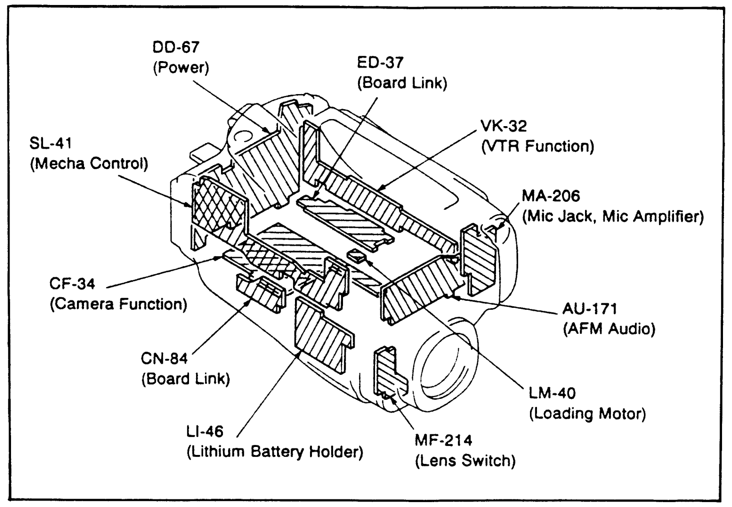
·SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷▷	
Drum servo (speed and phase)		▷▷▷	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal			

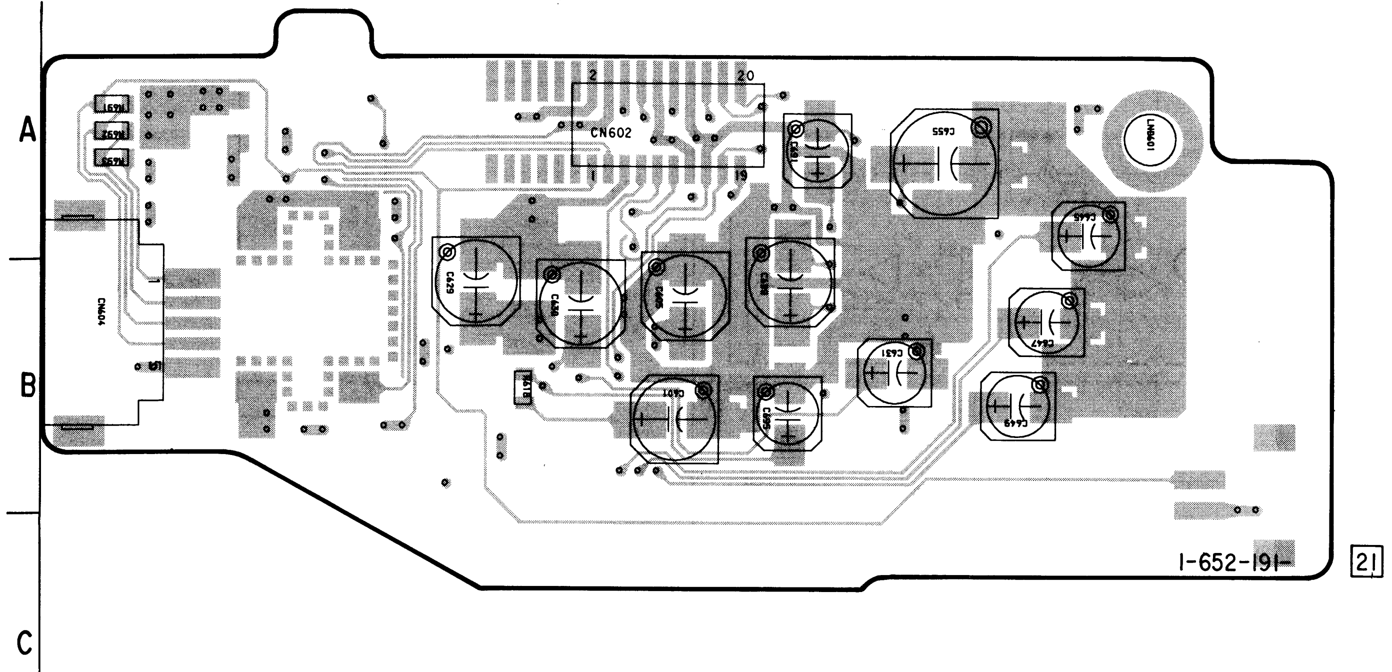
- Printed wiring boards of FP-442, LM-40 and LS-33 boards are omitted.

AU-171 (AFM AUDIO), MA-206 (MIC JACK, MIC AMPLIFIER) PRINTED WIRING BOARDS

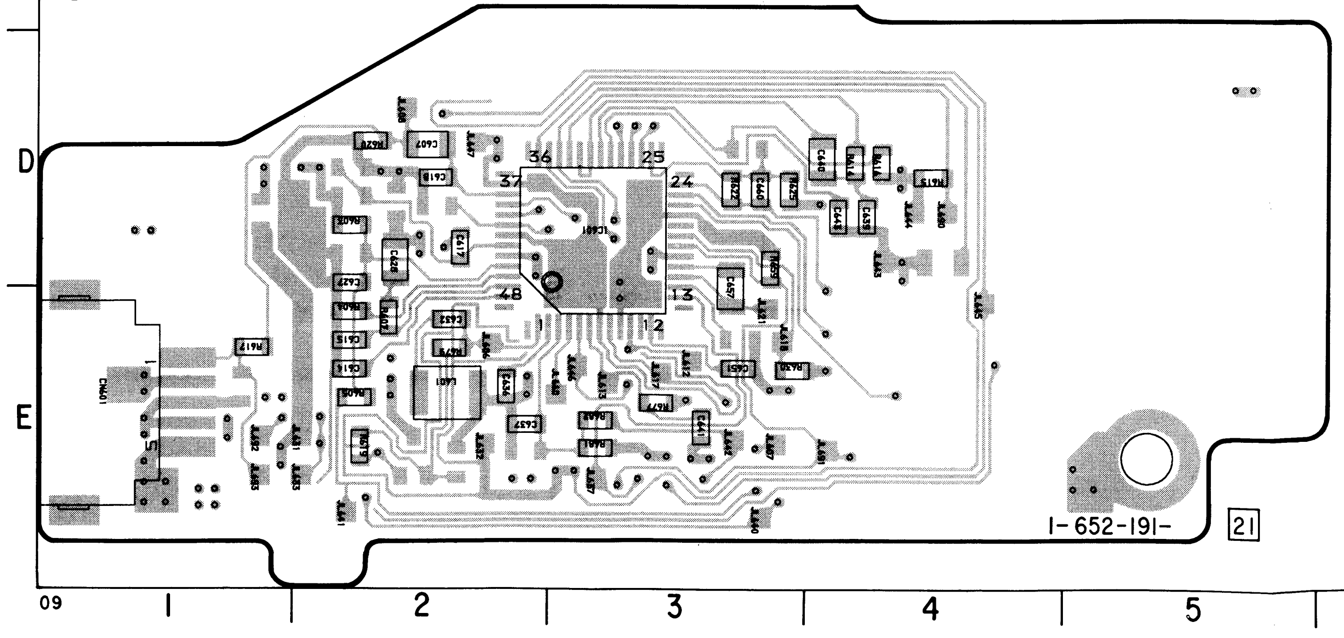
— Ref. No. AU-171, MA-206 BOARDS: 2000 series —


DD-67
(Power)
ED-37
(Board Link)
VK-32
(VTR Function)
SL-41
(Mecha Control)
MA-206
(Mic Jack, Mic Amplifier)
CF-34
(Camera Function)
AU-171
(AFM Audio)
CN-84
(Board Link)
LM-40
(Loading Motor)
LI-46
(Lithium Battery Holder)
MF-214
(Lens Switch)

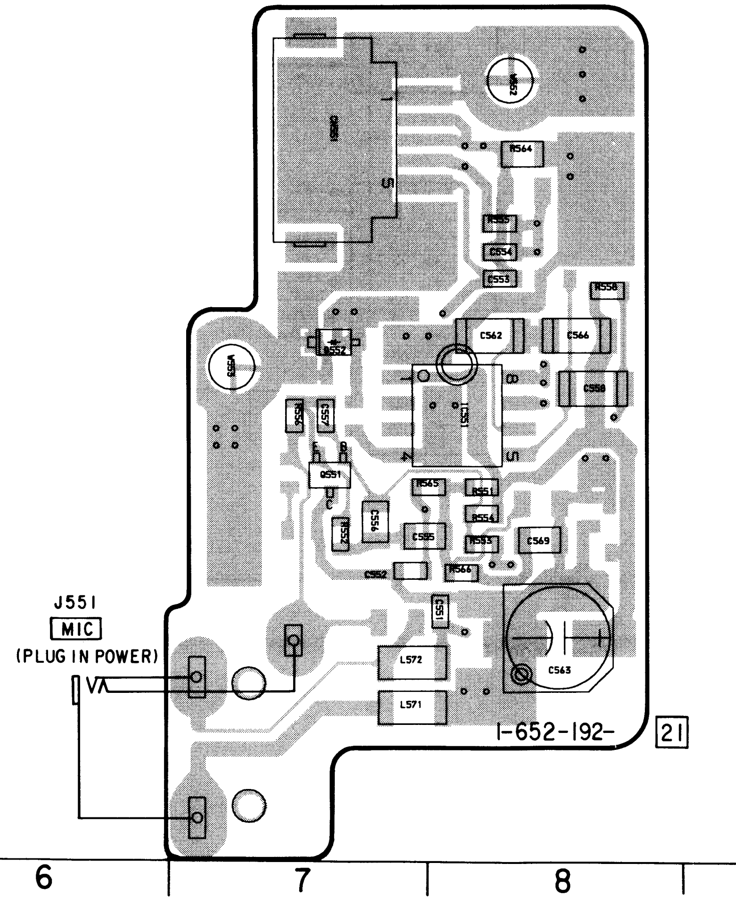
AU-171 BOARD (COMPONENT SIDE)


A
B
C
CN602
2
20
1
19
C655
LM601
CN604
C629
C636
C631
C647
C649
I-652-191-
21

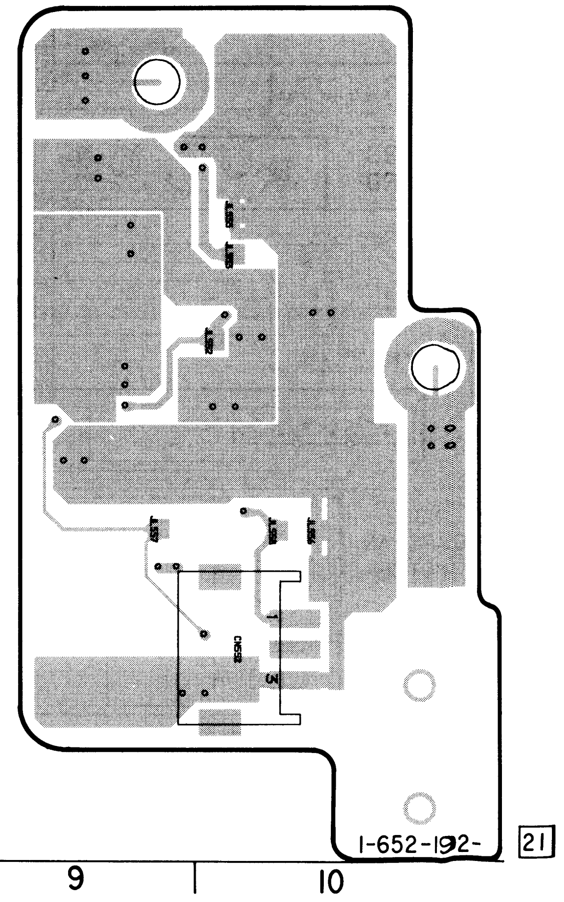
AU-171 BOARD (CONDUCTOR SIDE)


D
E
CN601
IC601
36
25
37
24
48
13
1
12
I-652-191-
21
09
1
2
3
4
5
6

MA-206 BOARD (COMPONENT SIDE)

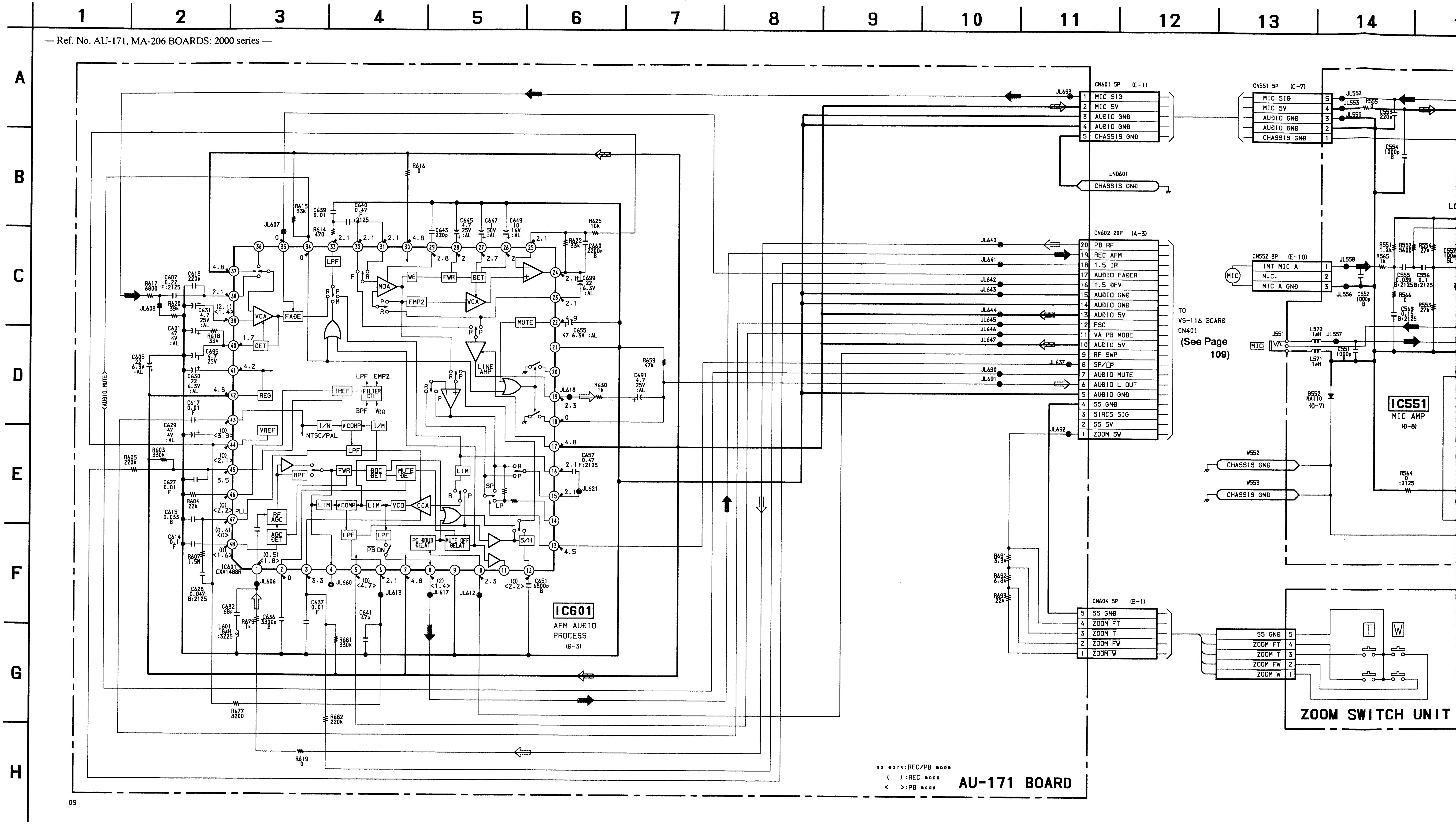

CN551
R564
C554
C553
R558
C562
C566
C568
IC551
Q551
R551
R554
R553
C555
C569
R566
L572
L571
C563
J551
MIC
(PLUG IN POWER)
I-652-192-
21
7
8

MA-206 BOARD (CONDUCTOR SIDE)


CN552
I-652-192-
21
9
10

AU-171 (AFM AUDIO), MA-206 (MIC JACK, MIC AMPLIFIER) SCHEMATIC DIAGRAM

— Ref. No. AU-171, MA-206 BOARDS: 2000 series —



1
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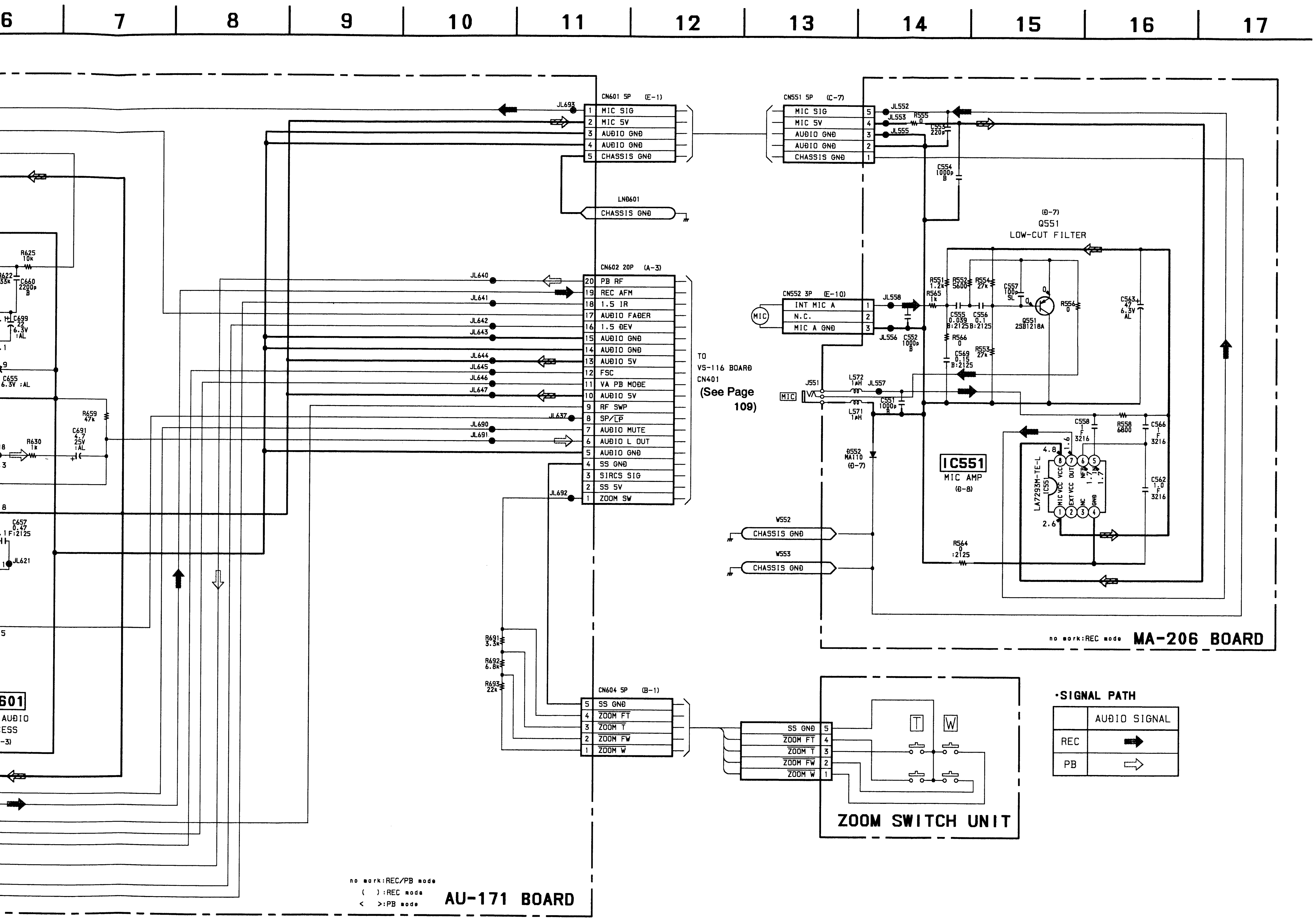
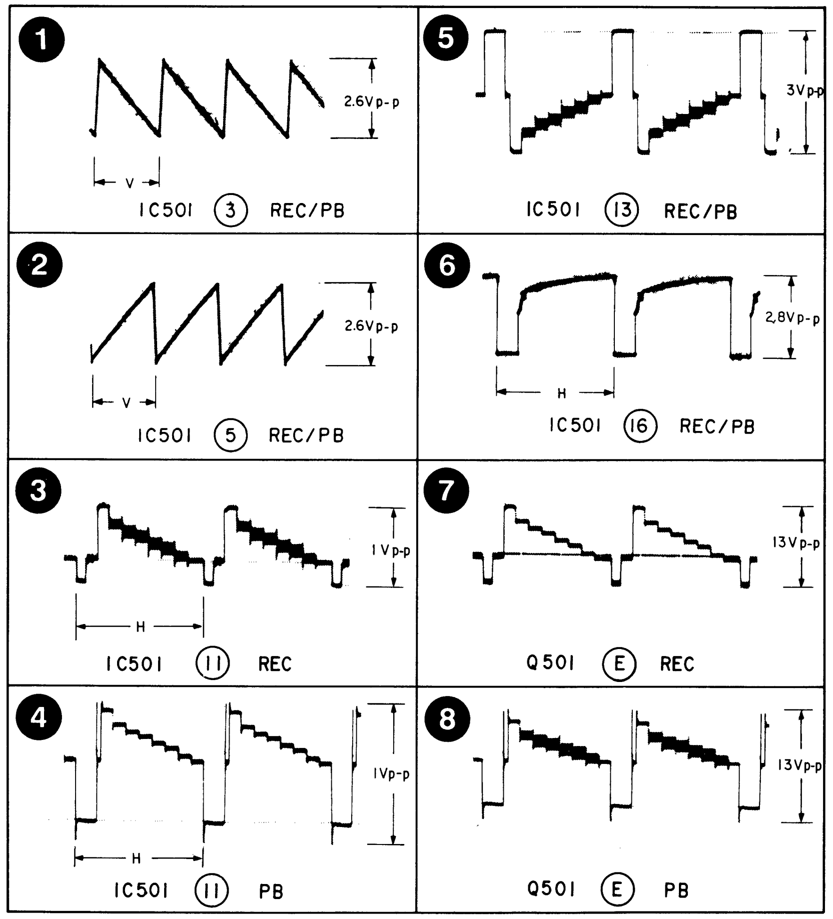
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H
CN601 5P (E-1)
1 MIC SIG
2 MIC 5V
3 AUDIO GND
4 AUDIO GND
5 CHASSIS GND
LND601
CHASSIS GND
CN602 20P (A-3)
20 PB RF
19 REC AFM
18 1.5 IR
17 AUDIO FADER
16 1.5 DEV
15 AUDIO GND
14 AUDIO GND
13 AUDIO 5V
12 FSC
11 VA PB MODE
10 AUDIO 5V
9 RF SWP
8 SP/LP
7 AUDIO MUTE
6 AUDIO L OUT
5 AUDIO GND
4 SS GND
3 SIRCS SIG
2 SS 5V
1 ZOOM SW
TO
VS-116 BOARD
CN401
(See Page
109)
CN604 5P (B-1)
5 SS GND
4 ZOOM FT
3 ZOOM T
2 ZOOM FW
1 ZOOM W
SS GND 5
ZOOM FT 4
ZOOM T 3
ZOOM FW 2
ZOOM W 1
T
W
ZOOM SWITCH UNIT
CN551 5P (C-7)
MIC SIG 5
MIC 5V 4
AUDIO GND 3
AUDIO GND 2
CHASSIS GND 1
CN552 3P (E-10)
INT MIC A 1
N.C. 2
MIC A GND 3
MIC
J551
W552
CHASSIS GND
W553
CHASSIS GND
IC551
MIC AMP
(D-8)
D552
MA110
(D-7)
IC601
AFM AUDIO
PROCESS
(D-3)
IC601
CXA1488R
VCA
FADE
DET
REG
VREF
IREF
FILTER CTL
LPF EMP2
BPF VDD
I/N
NTSC/PAL
COMP
LPF
BPF
FWR
DOC DET
MUTE DET
LIM
VCO
CCA
RF AGC
AGC DET
PLL
PC DOUB DELAY
MUTE OFF DELAY
S/H
PB ON
MOA
WE
EMP2
MUTE
LINE AMP
SP
LP
<AUDIO_MUTE>
no mark:REC/PB mode
( ):REC mode
< >:PB mode
AU-171 BOARD
09


6
7
8
9
10
11
12
13
14
15
16
17
CN601 5P (E-1)
JL693
1 MIC SIG
2 MIC 5V
3 AUDIO GND
4 AUDIO GND
5 CHASSIS GND
LND601
CHASSIS GND
CN602 20P (A-3)
JL640
JL641
JL642
JL643
JL644
JL645
JL646
JL647
JL637
JL690
JL691
JL692
20 PB RF
19 REC AFM
18 1.5 IR
17 AUDIO FADER
16 1.5 DEV
15 AUDIO GND
14 AUDIO GND
13 AUDIO 5V
12 FSC
11 VA PB MODE
10 AUDIO 5V
9 RF SWP
8 SP/LP
7 AUDIO MUTE
6 AUDIO L OUT
5 AUDIO GND
4 SS GND
3 SIRCS SIG
2 SS 5V
1 ZOOM SW
TO
VS-116 BOARD
CN401
(See Page
109)
R625
10k
R622
33k
C660
2200p
B
C699
22
6.3V
:AL
C655
6.3V :AL
R659
47k
C691
4.7
25V
:AL
R630
1k
C657
0.47
.1 F:2125
JL621
601
AUDIO
ESS
-3)
R691
3.3k
R692
6.8k
R693
22k
CN604 5P (B-1)
5 SS GND
4 ZOOM FT
3 ZOOM T
2 ZOOM FW
1 ZOOM W
no work:REC/PB mode
( ):REC mode
< >:PB mode
AU-171 BOARD
CN551 5P (C-7)
MIC SIG 5
MIC 5V 4
AUDIO GND 3
AUDIO GND 2
CHASSIS GND 1
JL552
JL553
JL555
R555
0
C553
220p
C554
1000p
B
(D-7)
Q551
LOW-CUT FILTER
CN552 3P (E-10)
INT MIC A 1
N.C. 2
MIC A GND 3
MIC
JL558
JL556
C552
1000p
B
R551
1.2k
R552
5600
R554
27k
R565
1k
C555
0.039
B:2125
C556
0.1
B:2125
C557
100p
SL
0
0
Q551
2SB1218A
R556
0
C563
47
6.3V
AL
R566
0
C569
0.15
B:2125
R553
27k
J551
MIC
L572
1μH
JL557
C551
1000p
B
L571
1μH
D552
MA110
(D-7)
IC551
MIC AMP
(D-8)
C558
1
F
3216
R558
6800
C566
1
F
3216
C562
1.0
F
3216
4.8
1.6
1.7
1.7
2.6
LA7293M-TE-L
IC551
8 VCC
7 OUT
6 NFB
5 IN
1 MIC VCC
2 EXT VCC
3 NC
4 GND
R564
0
:2125
WS52
CHASSIS GND
WS53
CHASSIS GND
no work:REC mode
MA-206 BOARD
SS GND 5
ZOOM FT 4
ZOOM T 3
ZOOM FW 2
ZOOM W 1
T
W
ZOOM SWITCH UNIT

·SIGNAL PATH

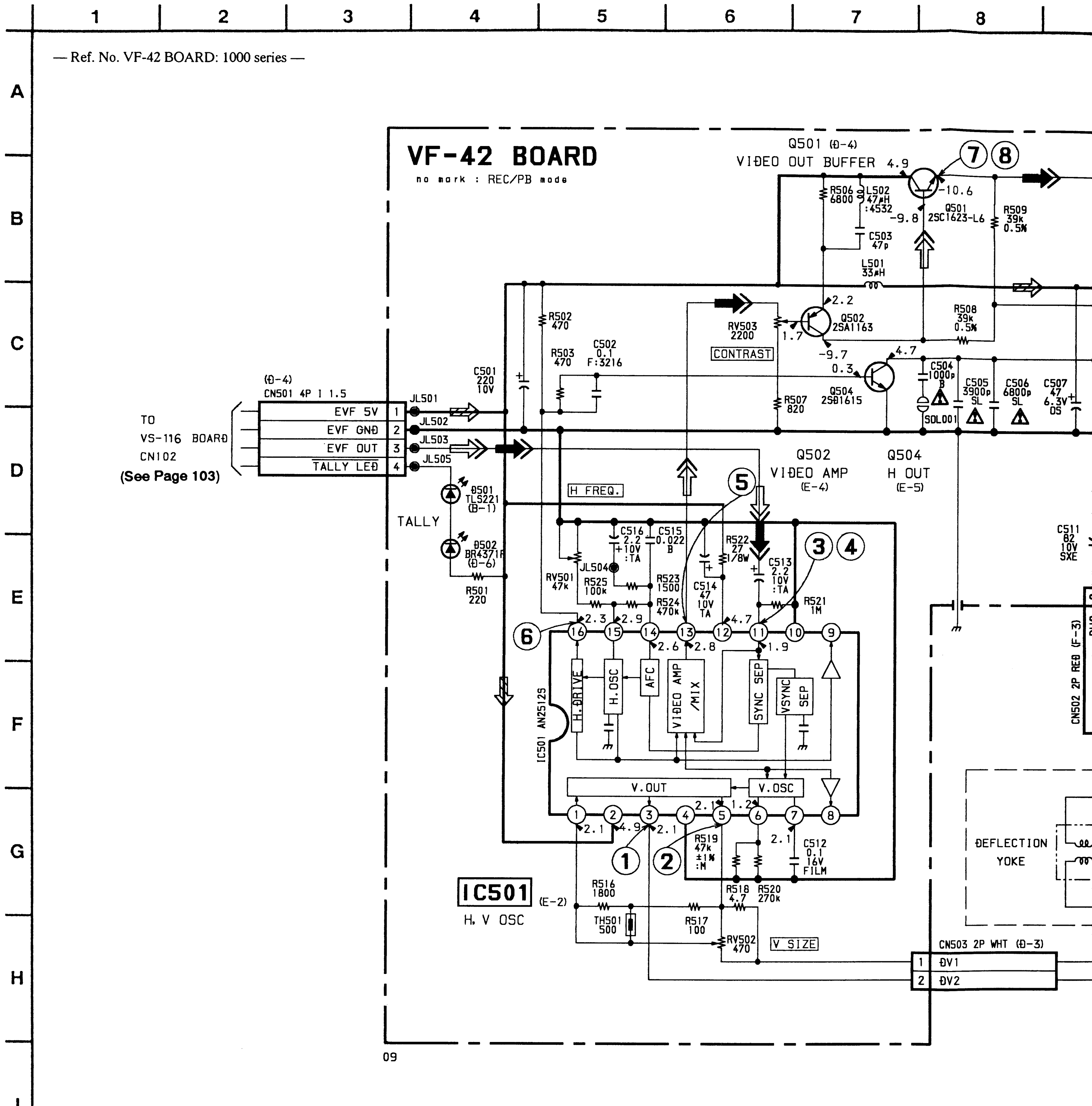
	AUDIO SIGNAL
REC	➡
PB	⇨

VF-42 BOARD



VF-42 (VIEW FINDER) SCHEMATIC DIAGRAM

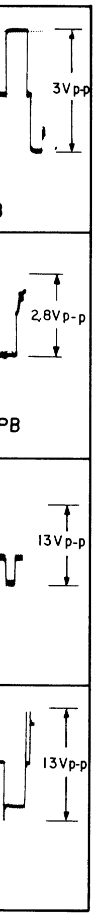
— Ref. No. VF-42 BOARD: 1000 series —

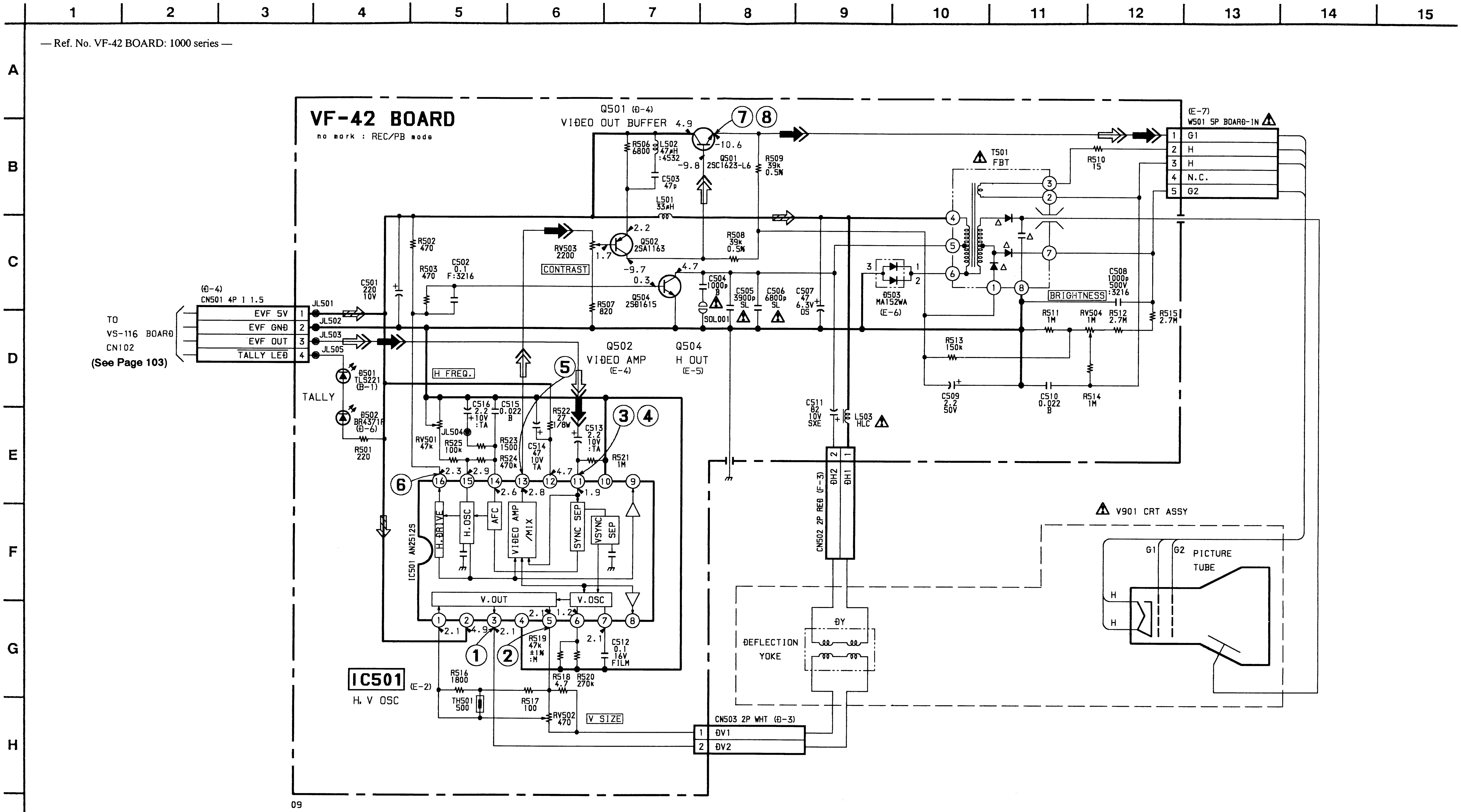

1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
VF-42 BOARD
no mark : REC/PB mode
Q501 (B-4)
VIDEO OUT BUFFER 4.9
⑦⑧
R506 6800
L502 47μH :4532
-10.6
-9.8
Q501 2SC1623-L6
R509 39k 0.5%
C503 47p
L501 33μH
2.2
Q502 2SA1163
1.7
R508 39k 0.5%
R502 470
R503 470
C502 0.1 F:3216
RV503 2200
CONTRAST
-9.7
4.7
0.3
Q504 2SB1615
C504 1000p B
C505 3900p SL
C506 6800p SL
C507 47 6.3V OS
SDL001
R507 820
C501 220 10V
(B-4)
CN501 4P I 1.5
TO
VS-116 BOARD
CN102
(See Page 103)
EVF 5V 1
EVF GND 2
EVF OUT 3
TALLY LED 4
JL501
JL502
JL503
JL505
D501 TLS221 (B-1)
TALLY
D502 BR4371F (B-6)
R501 220
Q502 VIDEO AMP (E-4)
Q504 H OUT (E-5)
H FREQ.
⑤
③④
C516 2.2 10V :TA
C515 0.022 B
R522 27 1/8W
C513 2.2 10V :TA
JL504
RV501 47k
R525 100k
R523 1500
R524 470k
C514 47 10V TA
R521 1M
⑥
2.3
2.9
2.6
2.8
4.7
1.9
16 15 14 13 12 11 10 9
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
IC501 AN2512S
V.OUT
V.OSC
1 2 3 4 5 6 7 8
2.1
4.9
2.1
2.1
1.2
2.1
①
②
R519 47k ±1% :M
C512 0.1 16V FILM
IC501
H, V OSC
(E-2)
R516 1800
TH501 500
R517 100
R518 4.7
R520 270k
RV502 470
V SIZE
CN503 2P WHT (B-3)
1 DV1
2 DV2
DEFLECTION YOKE
C511 82 10V SXE
CN502 2P RED (F-3)
09

Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

VF-42 (VIEW FINDER) SCHEMATIC DIAGRAM

— Ref. No. VF-42 BOARD: 1000 series —





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14
15
A
B
C
D
E
F
G
H
I
VF-42 BOARD
no mark : REC/PB mode
Q501 (D-4)
VIDEO OUT BUFFER
4.9
⑦⑧
-10.6
-9.8
Q501
2SC1623-L6
R506 6800
L502 47μH :4532
C503 47p
R509 39k 0.5%
L501 33μH
2.2
Q502 2SA1163
1.7
RV503 2200
CONTRAST
R508 39k 0.5%
4.7
-9.7
0.3
Q504 2SB1615
C504 1000p B
C505 3900p SL
C506 6800p SL
C507 47 6.3V OS
SOL001
R507 820
R502 470
R503 470
C502 0.1 F:3216
C501 220 10V
(D-4)
CN501 4P I 1.5
EVF 5V
EVF GND
EVF OUT
TALLY LED
JL501
JL502
JL503
JL505
TO VS-116 BOARD CN102
(See Page 103)
D501 TLS221 (B-1)
D502 BR4371F (D-6)
TALLY
R501 220
Q502 VIDEO AMP (E-4)
Q504 H OUT (E-5)
H FREQ.
⑤
③④
⑥
C516 2.2 10V :TA
C515 0.022 B
R522 27 1/8W
C513 2.2 10V :TA
RV501 47k
JL504
R525 100k
R523 1500
R524 470k
C514 47 10V TA
R521 1M
2.3
2.9
2.6
2.8
4.7
1.9
IC501 AN2512S
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
2.1
4.9
2.1
2.1
1.2
2.1
①②
R519 47k ±1% :M
C512 0.1 16V FILM
R516 1800
R518 4.7
R520 270k
TH501 500
R517 100
RV502 470
V SIZE
IC501
H, V OSC
(E-2)
CN503 2P WHT (D-3)
ΘV1
ΘV2
09
(E-7)
W501 5P BOARD-IN
G1
H
H
N.C.
G2
T501 FBT
R510 15
D503 MA152WA (E-6)
C508 1000p 500V :3216
BRIGHTNESS
R511 1M
RV504 1M
R512 2.7M
R515 2.7M
R513 150k
C509 2.2 50V
C510 0.022 B
R514 1M
C511 82 10V SXE
L503 HLC
CN502 2P RED (F-3)
ΘH2
ΘH1
V901 CRT ASSY
G1
G2
PICTURE TUBE
H
H
DY
DEFLECTION YOKE

Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

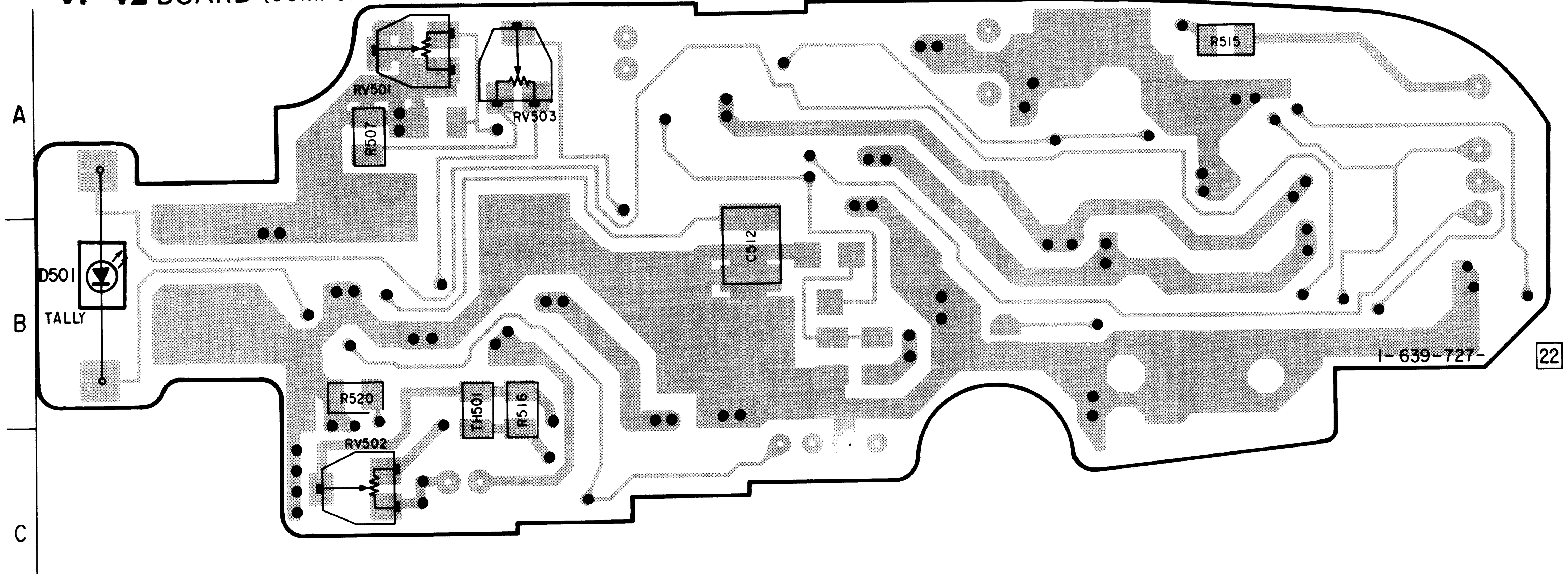
- **SIGNAL PATH**

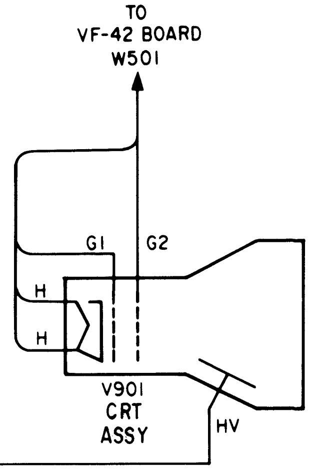
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC		➡	
PB		⇨	

VF-42 (VIEW FINDER) PRINTED WIRING BOARD

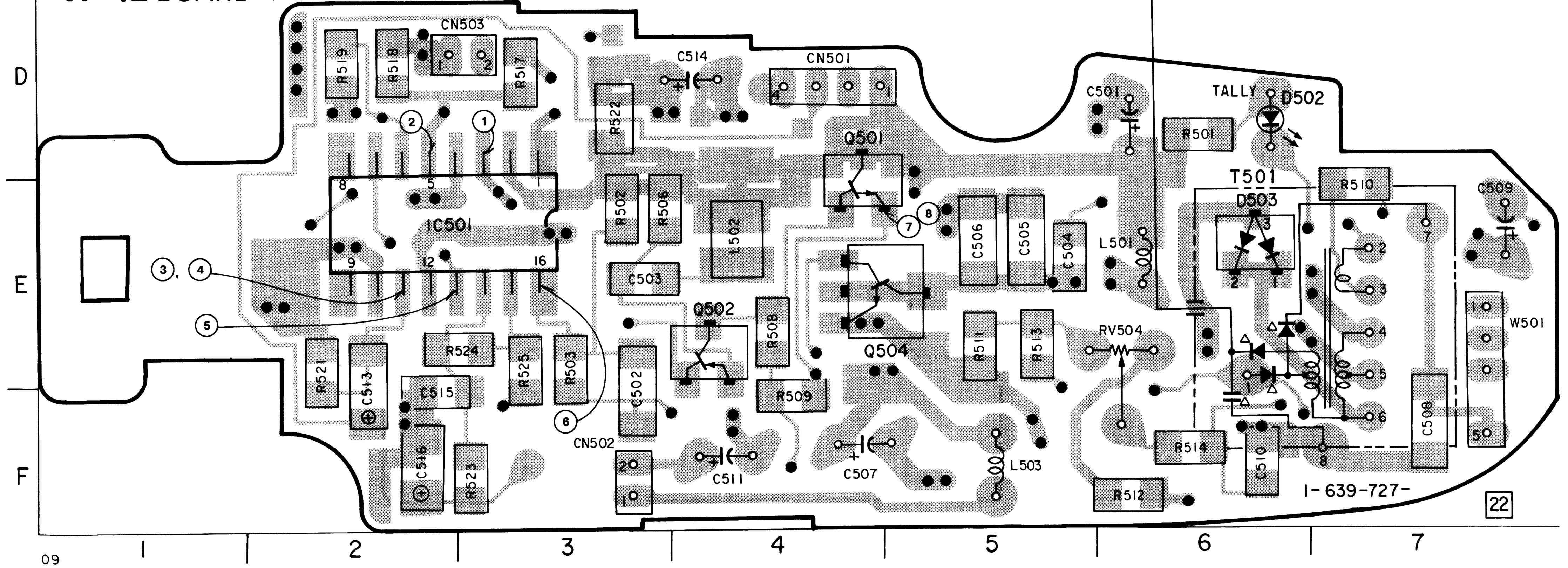
— Ref. No. VF-42 BOARD: 1000 series —

VF-42 BOARD (COMPONENT SIDE)


A
B
C
RV501
RV503
R507
R515
D501
TALLY
C512
R520
TH501
R516
RV502
1-639-727-
22


TO
VF-42 BOARD
W501
G1
G2
H
H
V901
CRT
ASSY
HV

VF-42 BOARD (CONDUCTOR SIDE)


D
E
F
1
2
3
4
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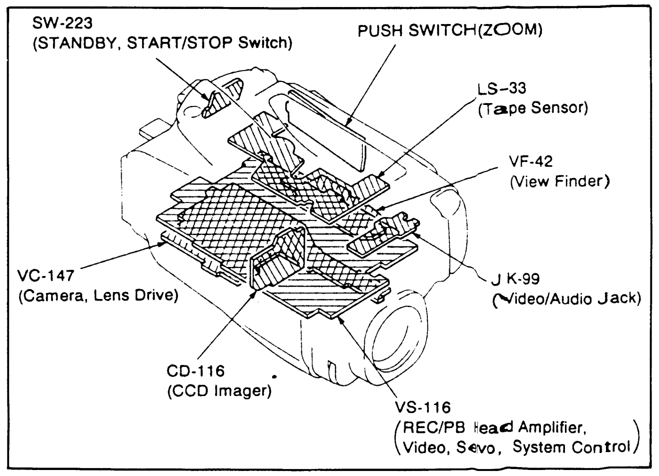
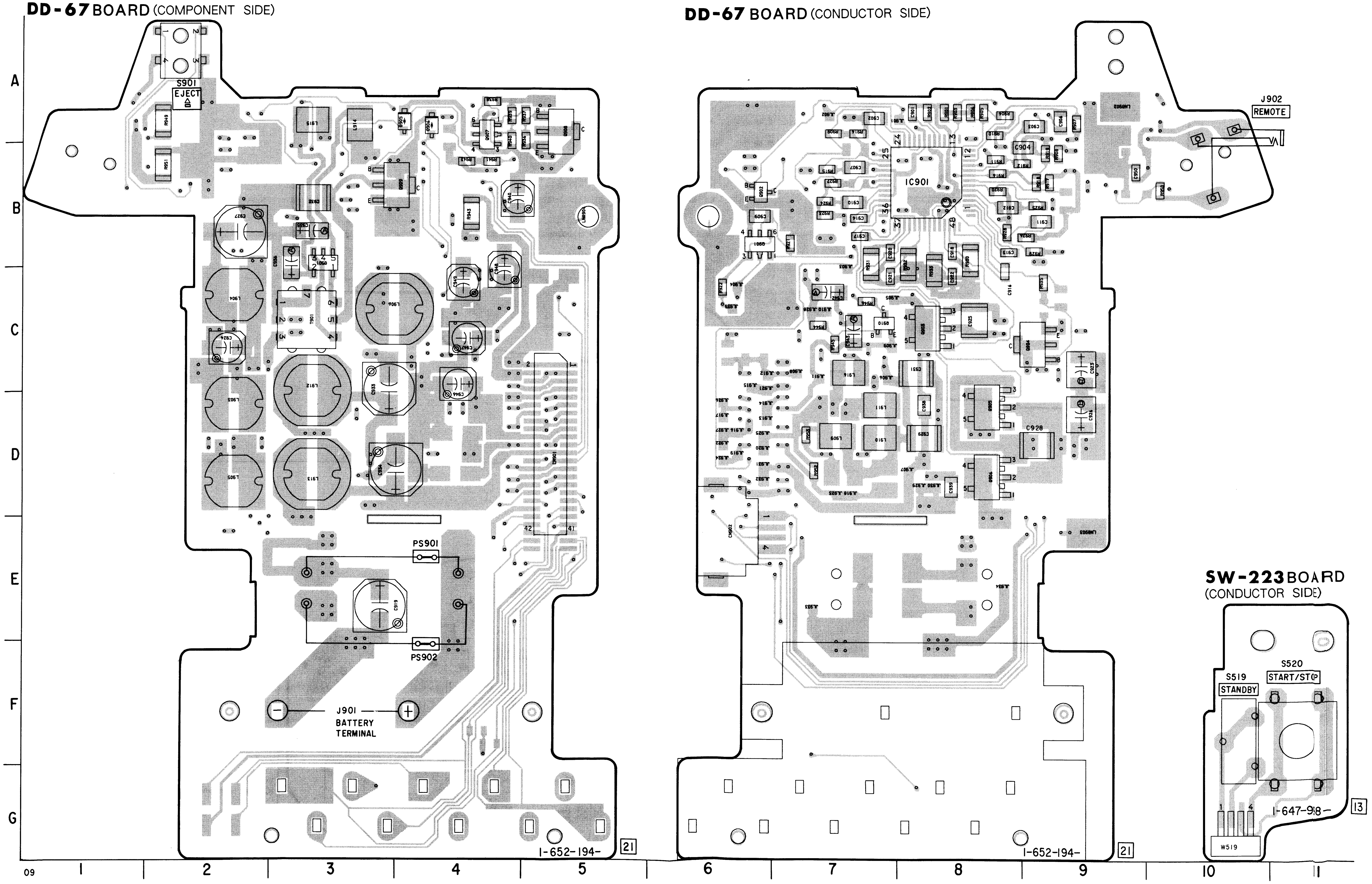
6
7
09
R519
R518
CN503
R517
C514
CN501
R522
C501
TALLY
D502
R501
IC501
Q501
T501
D503
R510
C509
R502
R506
L502
C506
C505
C504
L501
C503
Q502
R508
Q504
R511
R513
RV504
W501
R521
C513
R524
R525
R503
C502
R509
C515
C516
R523
CN502
C511
C507
L503
R514
C510
R512
C508
1-639-727-
22


SW-223
(STANDBY, START/STOP Switch)
PUSH SWITCH(ZOOM)
LS-33
(Tape Sensor)
VF-42
(View Finder)
VC-147
(Camera, Lens Drive)
JK-99
(Video/Audio Jack)
CD-116
(CCD Imager)
VS-116
(REC/PB Head Amplifier,
Video, Servo, System Control)

CCD-TR350E

DD-67 (POWER), SW-223 (STANDBY, START/STOP SWITCH) PRINTED WIRING BOARDS

— Ref. No. DD-67 BOARD: 1000 series, SW-223 BOARD: 7000 series —



DD-67 BOARD (COMPONENT SIDE)

DD-67 BOARD (CONDUCTOR SIDE)

SW-223 BOARD (CONDUCTOR SIDE)

S901
EJECT
PS901
PS902
J901
BATTERY TERMINAL
IC901
J902
REMOTE
C904
C928
S519
STANDBY
S520
START/STOP
W519
1-652-194-
21
1-647-918-
13
A
B
C
D
E
F
G
09
1
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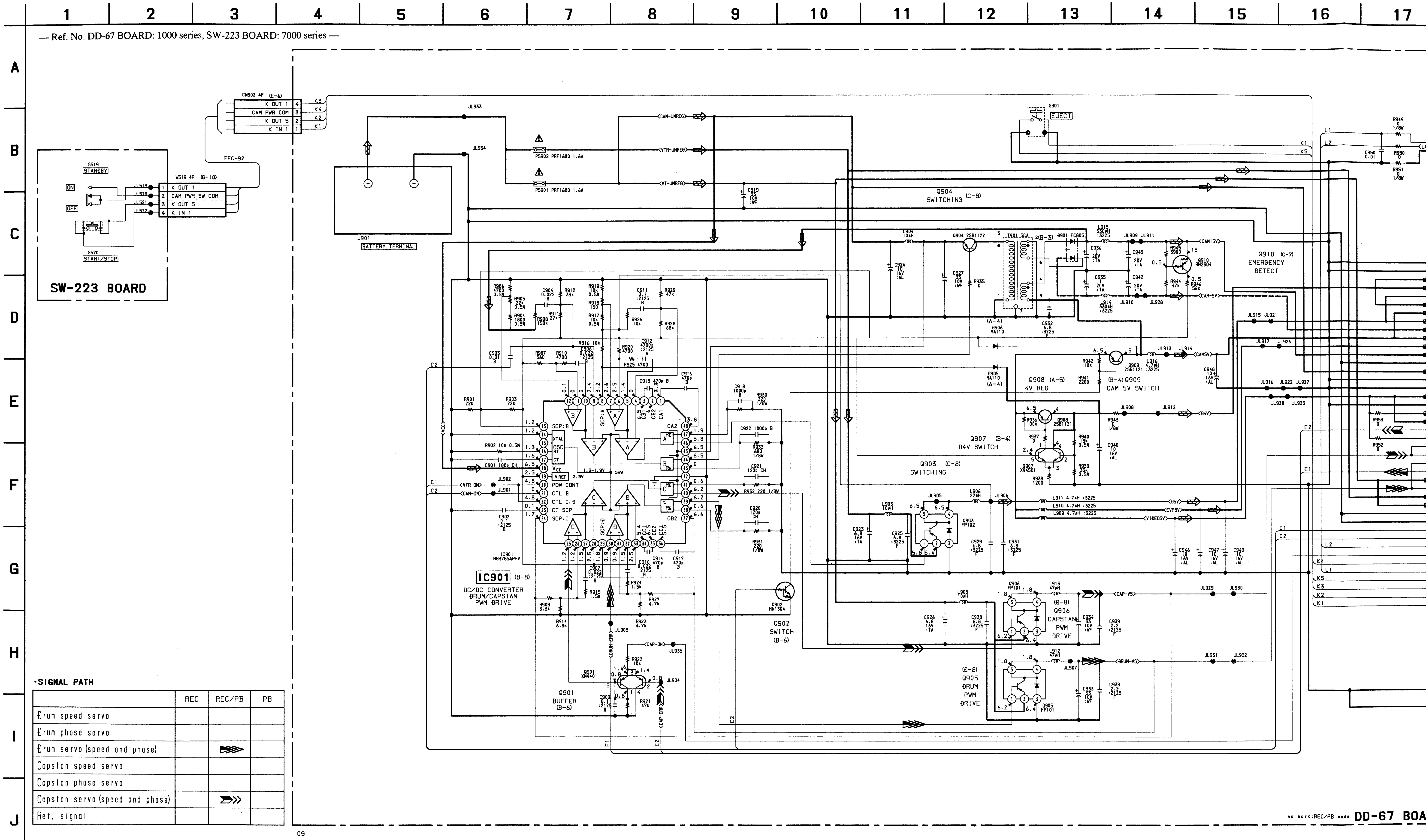
11

DD-67 (POWER), SW-223 (STANDBY, START/STOP SWITCH) SCHEMATIC DIAGRAM

— Ref. No. DD-67 BOARD: 1000 series, SW-223 BOARD: 7000 series —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A
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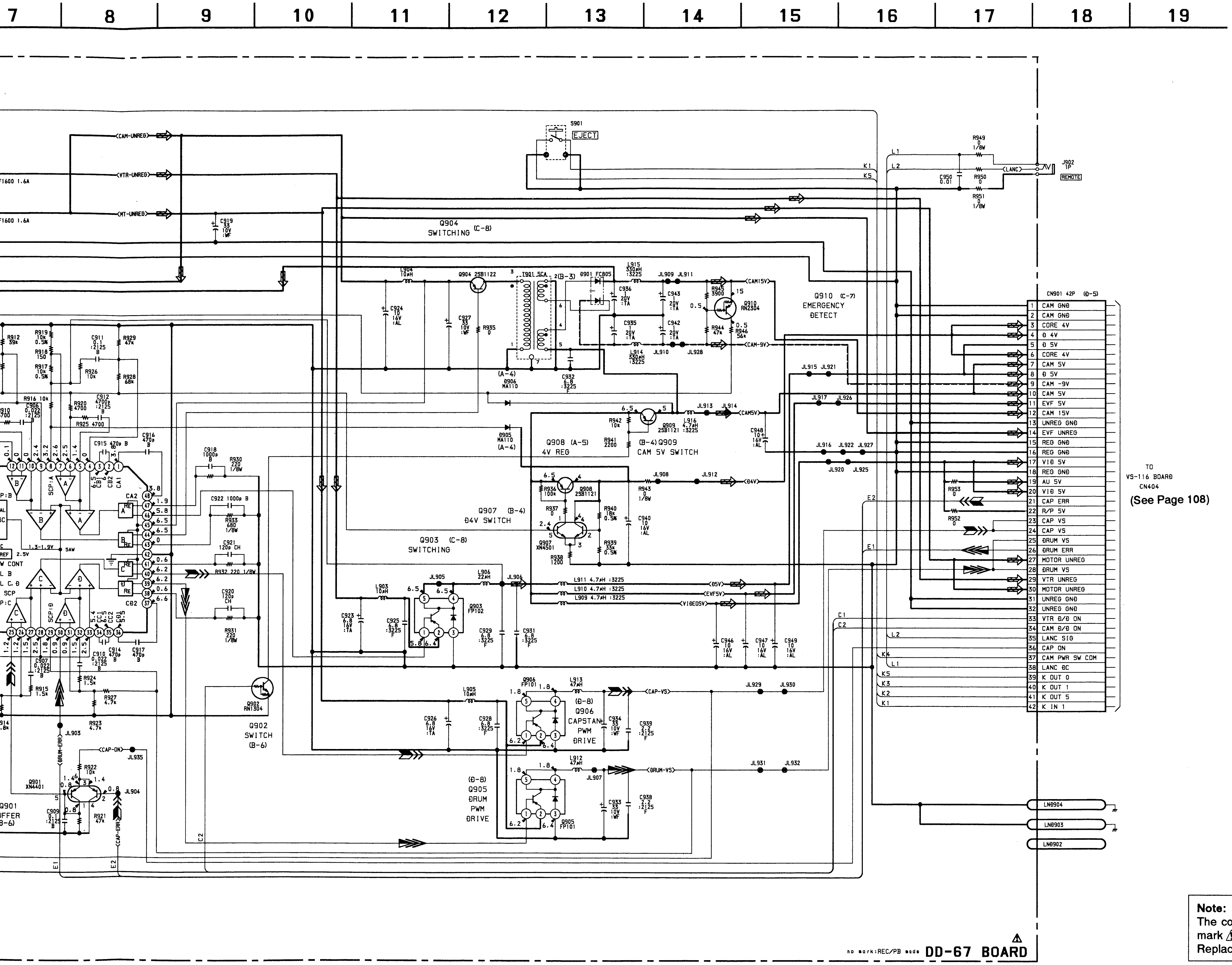
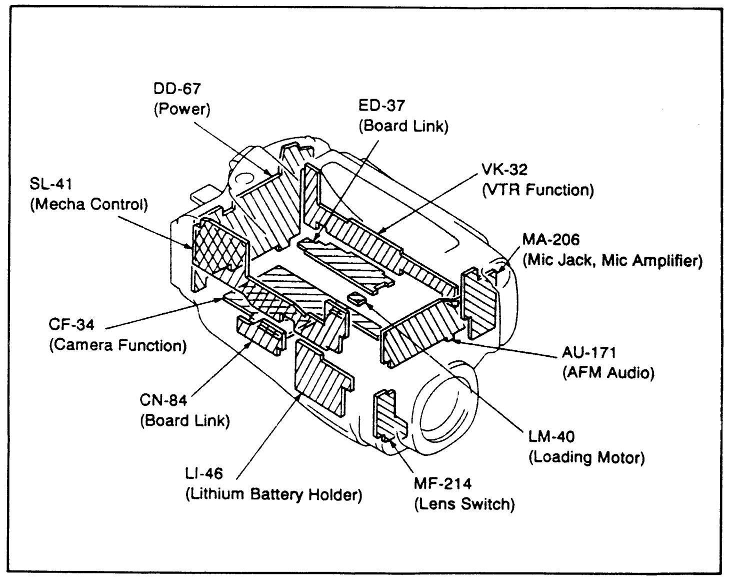
C
D
E
F
G
H
I
J
SW-223 BOARD
S519 STANDBY
ON
OFF
S520 START/STOP
W519 4P (D-10)
K OUT 1
CAM PWR SW COM
K OUT 5
K IN 1
CN902 4P (E-6)
FFC-92
J901 BATTERY TERMINAL
PS902 PRF1600 1.6A
PS901 PRF1600 1.6A
CAM-UNREG
VTR-UNREG
MT-UNREG
Q904 SWITCHING (C-8)
S901 EJECT
Q910 (C-7) EMERGENCY DETECT
CAM15V
CAM-9V
CAM5V
D4V
Q908 (A-5) 4V REG
(B-4) Q909 CAM 5V SWITCH
Q907 (B-4) D4V SWITCH
Q903 (C-8) SWITCHING
D5V
EVF5V
VIDEO5V
IC901 (B-8) DC/DC CONVERTER DRUM/CAPSTAN PWM DRIVE
IC901 MB3785APFV
VTR-ON
CAM-ON
Q902 SWITCH (B-6)
Q901 BUFFER (B-6)
DRUM-ERR
CAP-ERR
CAP-ON
CAP-VS
DRUM-VS
(D-8) Q906 CAPSTAN PWM DRIVE
(D-8) Q905 DRUM PWM DRIVE
09

•SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)		➤➤	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)		➤»	·
Ref. signal			

no mark:REC/PB mode DD-67 BOA

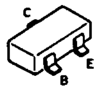

7
8
9
10
11
12
13
14
15
16
17
18
19
S901
EJECT
J902
1P
REMOTE
LANC
R949 0 1/8W
R950 0
R951 0 1/8W
C950 0.01
CAM-UNREG
VTR-UNREG
MT-UNREG
Q904 SWITCHING (C-8)
Q904 2SB1122
T901 SCA
D901 FC805
L904 10μH
L915 330μH
CAM15V
CAM-9V
Q910 (C-7) EMERGENCY DETECT
Q910 RN2304
D906 MA110
Q908 (A-5) 4V REG
Q909 2SB1121
(B-4) Q909 CAM 5V SWITCH
CAM5V
D905 MA110
Q907 (B-4) D4V SWITCH
Q908 2SB1121
Q907 XN4501
D4V
Q903 (C-8) SWITCHING
Q903 FP102
D5V
EVF5V
VIDEO5V
CAP-VS
DRUM-VS
CAP-ON
DRUM-ERR
CAP-ERR
Q906 (D-8) CAPSTAN PWM DRIVE
Q906 FP101
(D-8) Q905 DRUM PWM DRIVE
Q905 FP101
Q902 RN1304
Q902 SWITCH (B-6)
Q901 XN4401
Q901 BUFFER (B-6)
CN901 42P (D-5)
1 CAM GND
2 CAM GND
3 CORE 4V
4 D 4V
5 D 5V
6 CORE 4V
7 CAM 5V
8 D 5V
9 CAM -9V
10 CAM 5V
11 EVF 5V
12 CAM 15V
13 UNREG GND
14 EVF UNREG
15 REG GND
16 REG GND
17 VID 5V
18 REG GND
19 AU 5V
20 VID 5V
21 CAP ERR
22 R/P 5V
23 CAP VS
24 CAP VS
25 DRUM VS
26 DRUM ERR
27 MOTOR UNREG
28 DRUM VS
29 VTR UNREG
30 MOTOR UNREG
31 UNREG GND
32 UNREG GND
33 VTR D/D ON
34 CAM D/D ON
35 LANC SIG
36 CAP ON
37 CAM PWR SW COM
38 LANC DC
39 K OUT 0
40 K OUT 1
41 K OUT 5
42 K IN 1
TO VS-116 BOARD CN404
(See Page 108)
LND904
LND903
LND902
no mark:REC/PB mode
DD-67 BOARD


DD-67 (Power)
ED-37 (Board Link)
SL-41 (Mecha Control)
VK-32 (VTR Function)
MA-206 (Mic Jack, Mic Amplifier)
CF-34 (Camera Function)
AU-171 (AFM Audio)
CN-84 (Board Link)
LM-40 (Loading Motor)
LI-46 (Lithium Battery Holder)
MF-214 (Lens Switch)

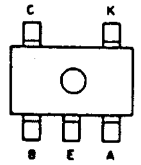
Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

4-3. SEMICONDUCTORS

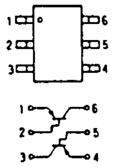
DTA114EE
DTC124EE
RN1302
RN2302
UN511E
UN5112
UN5113
UN5115
UN521E
UN5212
UN5213
UN9111
2SA1162
2SA1163-G
2SA1576-R
2SA1586
2SA1622-5.6.7
2SA1774R
2SB1202FAST
2SB1295-UL6
2SB1462Q
2SB1574
2SC1623
2SC2223-F13
2SC4178-F14
2SC4211-5.6.7
2SC4617
2SD1819A-R
2SD2216Q



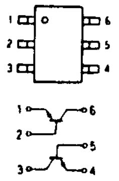
FP101
FP102



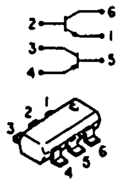
UMT1
XP4401



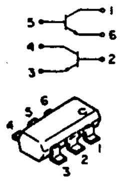
UMX1
XP4501



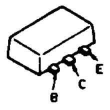
UMZ1
XN4312



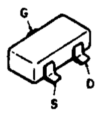
XN4213
XN4215
XN4501



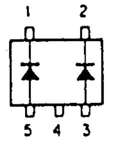
2SB1121
2SB1122-S
2SB798-DL
2SD1615A-GP



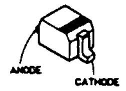
2SK1875



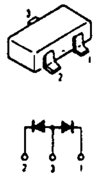
FC805



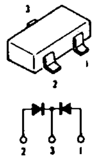
MA110
1SS332



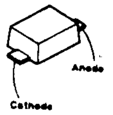
MA142WA
MA152WA
1SS181



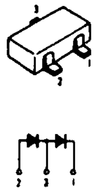
MA142WK



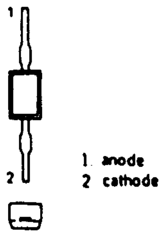
MA728
MA8082



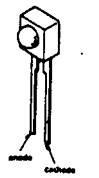
1SS123
1SS226



TLS221



BR4371F

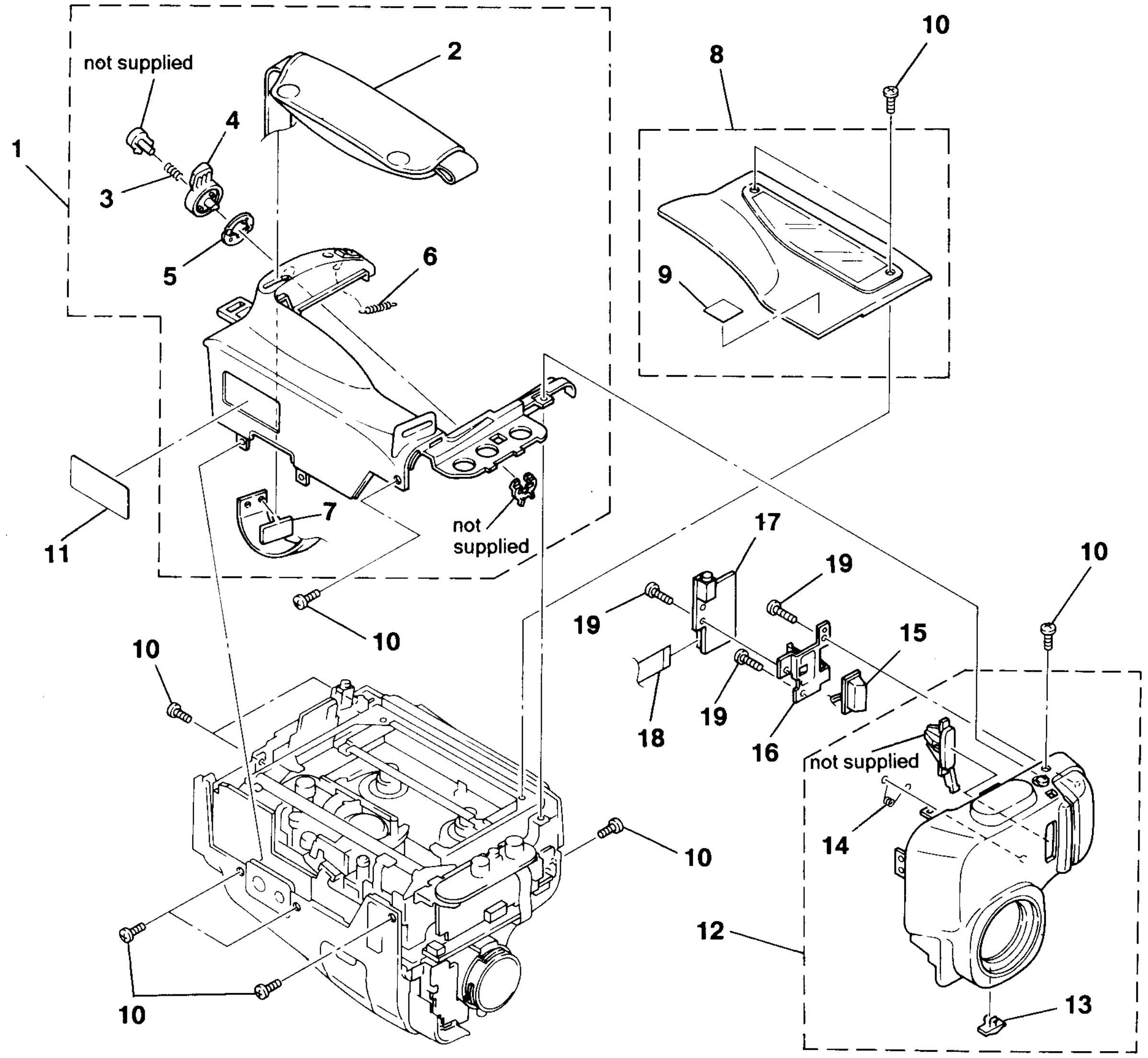


SECTION 5
EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " ∗ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.
- Australian model is abbreviated as AUS.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

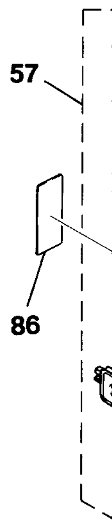
5-1. CABINET (L) AND FRONT PANEL ASSEMBLIES



Ref. No.	Part No.	Description	Remark
1	X-3942-282-1	CABINET (L) ASSY	
2	3-736-807-01	BELT, GRIP	
3	3-578-221-00	SPRING, COMPRESSION	
4	3-942-985-01	KNOB, STAND-BY	
5	3-736-364-01	SPRING	
6	4-602-490-00	SPRING, TENSION	
7	3-942-895-01	STOPPER, BELT	
8	X-3943-989-1	LID ASSY, CASSETTE	
9	3-703-710-41	STICKER, SONY SYMBOL (12)	
10	3-719-381-01	SCREW (M2X4)	

Ref. No.	Part No.	Description	Remark
∗ 11	3-958-103-01	LABEL, MODEL NUMBER (AEP)(AEP, Russian)	
∗ 11	3-958-104-01	LABEL, MODEL NUMBER (UK)(UK, E, AUS, Tourist)	
12	X-3943-990-1	PANEL ASSY, FRONT	
13	3-942-905-01	KNOB, S	
14	3-947-357-01	SPRING, TORSION	
15	A-7091-800-A	MICROPHONE UNIT	
∗ 16	3-949-000-01	RETAINER, MICROPHONE	
∗ 17	A-7063-979-A	MA-206PLL BOARD, COMPLETE	
18	1-696-487-11	CABLE, FLAT (FFC-90)	
19	3-713-790-21	SCREW (M2X6), TAPPING, P3	

5-2. CABI



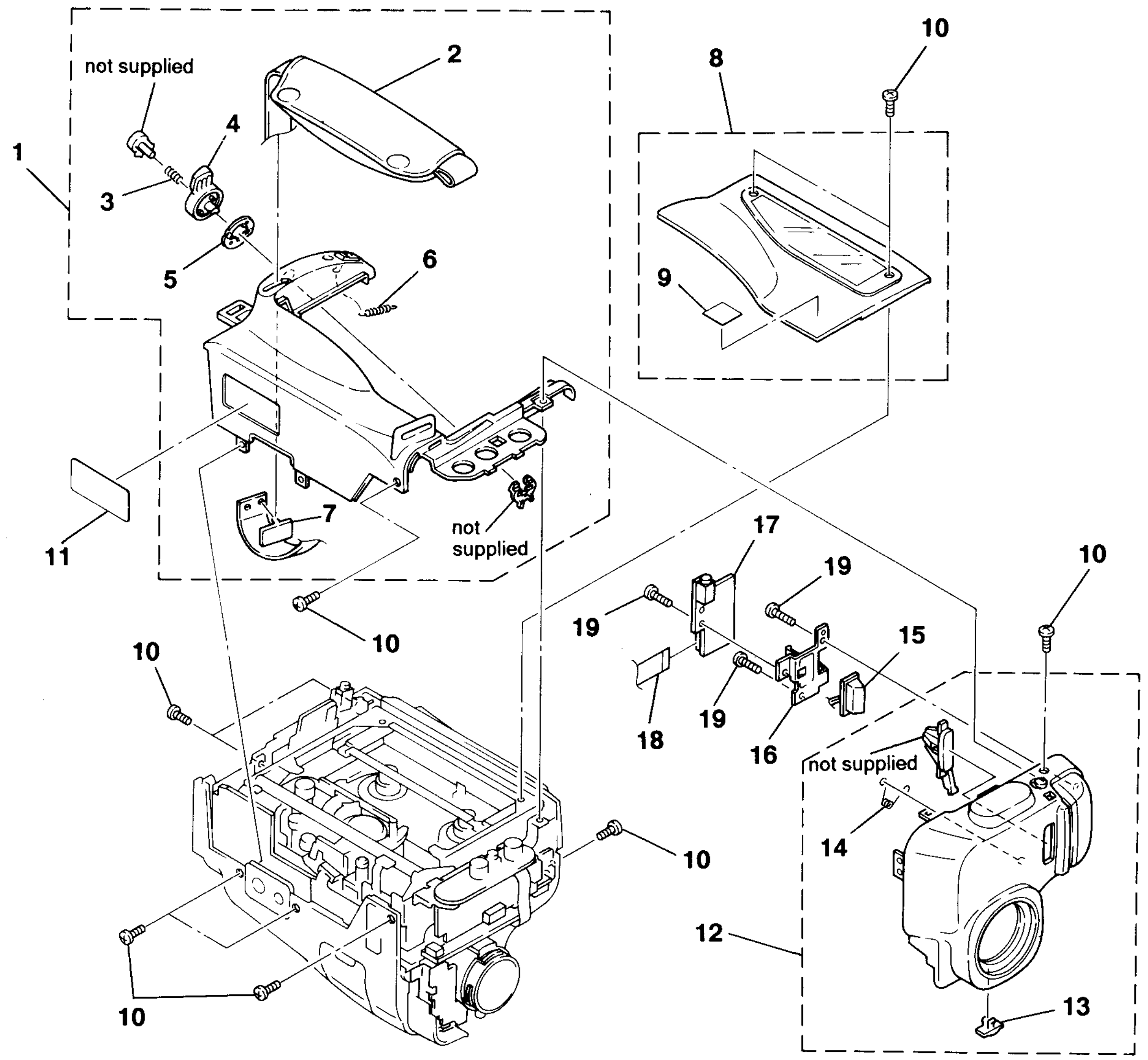
Ref. No.	Part N
∗ 51	A-7072
∗ 52	A-7072
∗ 53	A-7072
∗ 54	A-7072
55	3-713-
56	3-740-
57	X-3943
58	3-942-
59	3-948-
60	3-948-
61	4-908-
62	3-948-
63	3-719-
64	3-948-
65	3-747-
66	3-948-
67	3-747-
68	3-747-
69	3-747-
70	3-747-
71	3-949-

SECTION 5
EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " ＊ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.
- Australian model is abbreviated as AUS.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

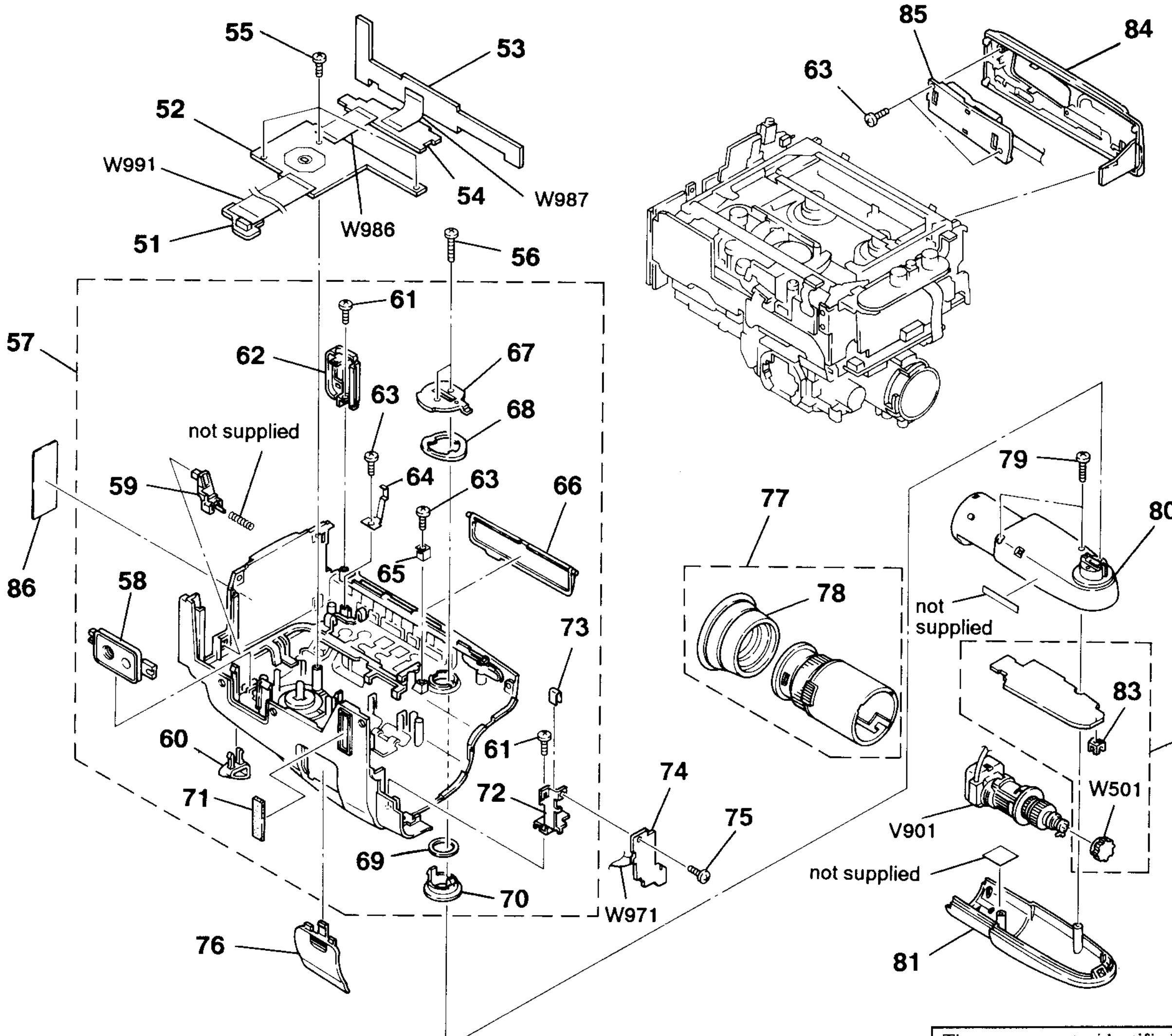
5-1. CABINET (L) AND FRONT PANEL ASSEMBLIES



Ref. No.	Part No.	Description	Remark
1	X-3942-282-1	CABINET (L) ASSY	
2	3-736-807-01	BELT, GRIP	
3	3-578-221-00	SPRING, COMPRESSION	
4	3-942-985-01	KNOB, STAND-BY	
5	3-736-364-01	SPRING	
6	4-602-490-00	SPRING, TENSION	
7	3-942-895-01	STOPPER, BELT	
8	X-3943-989-1	LID ASSY, CASSETTE	
9	3-703-710-41	STICKER, SONY SYMBOL (12)	
10	3-719-381-01	SCREW (M2X4)	

Ref. No.	Part No.	Description	Remark
* 11	3-958-103-01	LABEL, MODEL NUMBER (AEP)(AEP, Russian)	
* 11	3-958-104-01	LABEL, MODEL NUMBER (UK)(UK, E, AUS, Tourist)	
12	X-3943-990-1	PANEL ASSY, FRONT	
13	3-942-905-01	KNOB, S	
14	3-947-357-01	SPRING, TORSION	
15	A-7091-800-A	MICROPHONE UNIT	
* 16	3-949-000-01	RETAINER, MICROPHONE	
* 17	A-7063-979-A	MA-206PLL BOARD, COMPLETE	
18	1-696-487-11	CABLE, FLAT (FFC-90)	
19	3-713-790-21	SCREW (M2X6), TAPPING, P3	

5-2. CABINET (R) AND EVF ASSEMBLIES

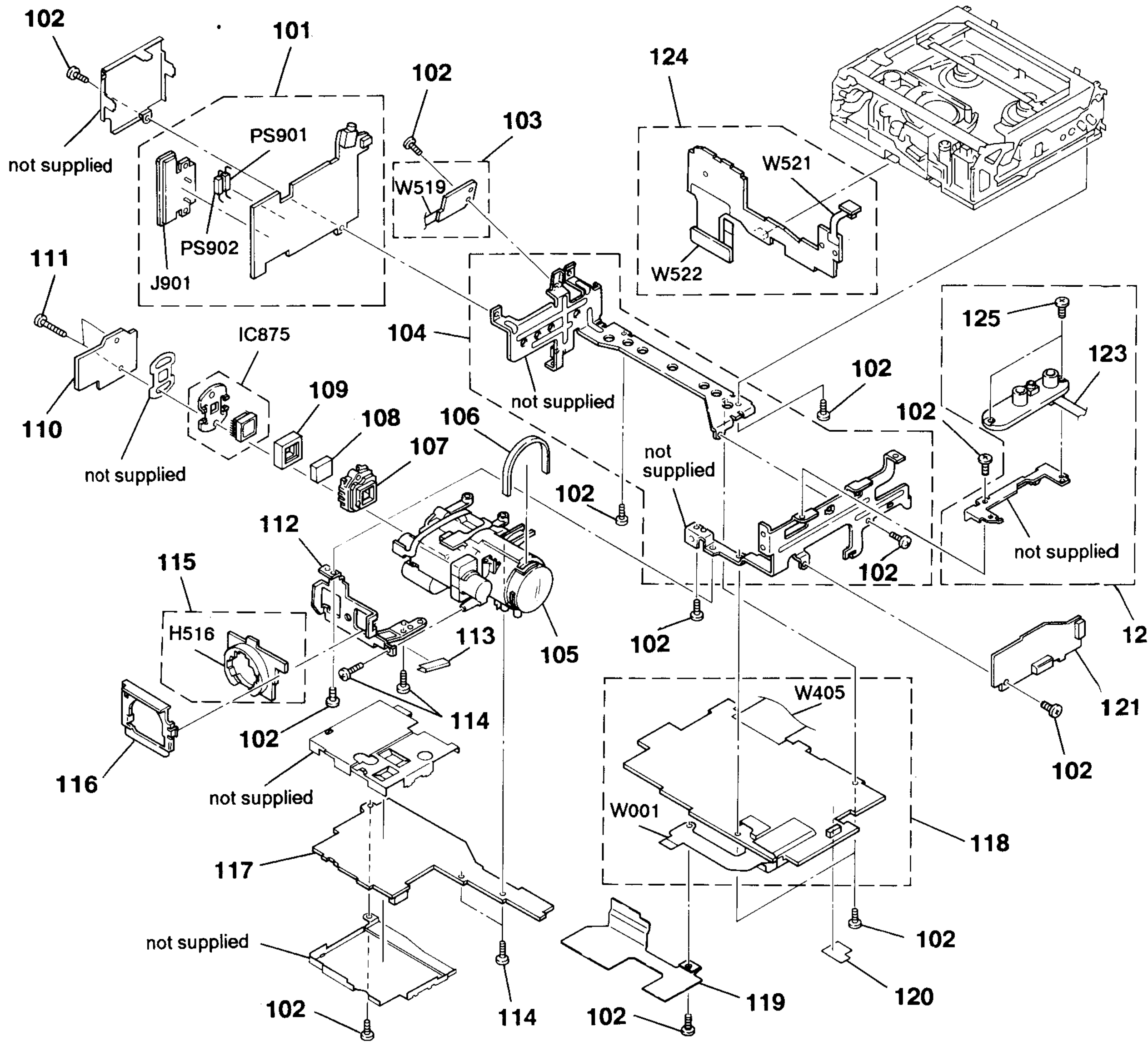


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
* 51	A-7072-008-A	CN-84PLL BOARD, COMPLETE	
* 52	A-7072-012-A	CF-34PLL BOARD, COMPLETE	
* 53	A-7072-010-A	VK-32LL BOARD, COMPLETE	
* 54	A-7072-013-A	ED-37PLL BOARD, COMPLETE	
55	3-713-790-21	SCREW (M2X6), TAPPING, P3	
56	3-740-546-41	SCREW (M2X10)	
57	X-3943-991-1	CABINET (R) ASSY	
58	3-942-911-01	SCREW, TRIPOD	
59	3-948-990-01	LOCK, BATTERY	
60	3-948-989-01	KNOB, BATTERY	
61	4-908-792-71	SCREW (B2X6), TAPPING, P1	
62	3-948-975-51	BASE, POWER	
63	3-719-601-01	SCREW (B2X5), TAPPING	
64	3-948-988-01	SPRING, LEAF, VK	
65	3-747-178-01	REINFORCEMENT, TILT LOCK	
66	3-948-976-01	DOOR, CONTROL	
67	3-747-111-01	PLATE, LOCK, TILT	
68	3-747-110-01	SPRING, LEAF, TILT	
69	3-747-112-01	RING, TILT	
70	3-747-109-01	SLEEVE, EVF	
71	3-949-008-01	SHEET, FOOT	

Ref. No.	Part No.	Description	Remark
* 72	3-948-987-01	FRAME, MF	
73	2-532-810-00	CUSHION, 15X5X0.3	
* 74	A-7072-009-A	MF-214W BOARD, COMPLETE	
75	3-713-786-21	SCREW (M2X3)	
76	3-948-843-01	LID, BATTERY CASE, LITHIUM	
77	X-3941-603-1	HOLDER ASSY, FINDER	
78	3-946-426-01	EYE CUP	
79	3-713-790-31	SCREW (M2X8), TAPPING, P3	
80	X-3940-706-1	CABINET (L) ASSY, EVF	
81	3-943-077-01	CABINET (R), EVF	
* 82	A-7063-220-A	VF-42P BOARD, COMPLETE	
83	3-942-888-01	HOLDER, LED	
84	X-3941-894-1	LID ASSY, LS	
85	1-692-257-11	SWITCH, PUSH (ZOOM)	
* 86	3-704-235-01	LABEL, CAUTION (UK)	
⚠V901	1-452-565-11	CRT ASSY (M01KKD70WB)	
⚠W501	1-540-019-21	SOCKET ASSY, CRT	
W971	1-696-484-11	CABLE, FLAT (FFC-87)	
W986	1-696-621-11	FP-590 FLEXIBLE BOARD	
W987	1-696-622-11	FP-591 FLEXIBLE BOARD	
W991	1-696-483-11	CABLE, FLAT (FFC-86)	

5-3. MAIN BOARDS ASSEMBLY


102
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102
124
103
PS901
W519
W521
not supplied
PS902
111
J901
W522
104
IC875
125
123
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not supplied
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102
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107
not supplied
not supplied
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112
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not supplied
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H516
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122
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W405
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116
not supplied
W001
118
117
not supplied
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120

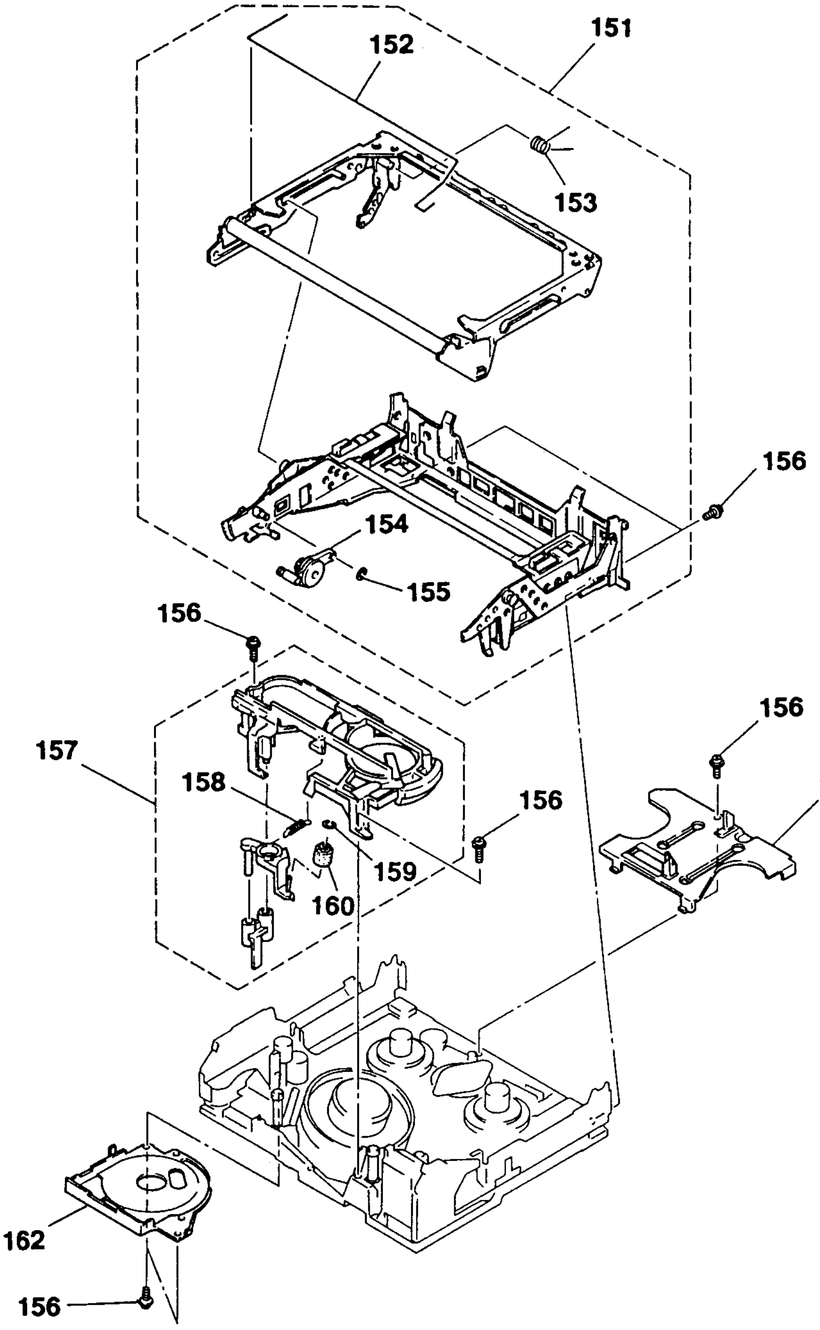
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Be sure to read "Note on the CCD Imager replacement" on page 78 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
⚠*101	A-7063-977-A	DD-67PLL BOARD, COMPLETE	
102	3-713-786-51	SCREW (M2X3)	
* 103	A-7071-828-A	SW-223 BOARD, COMPLETE	
* 104	X-3942-209-1	FRAME (UPPER LOWER) ASSY	
105	1-547-548-11	LENS, ZOOM (VCL-6210WC)(TYPE A)	
105	1-547-630-11	LENS, ZOOM (VCL-6210WF)(TYPE B)	
106	3-954-580-01	CUSHION, LENS	
107	3-946-856-01	ADAPTOR (H), CCD FITTING	
108	1-547-558-21	FILTER BLOCK, OPTICAL	
109	3-946-857-01	RUBBER (S), SEAL	
* 110	A-7063-973-A	CD-116PLL BOARD, COMPLETE	
111	3-947-268-01	SCREW (B TIGHT) (2), TAPPING	
* 112	3-949-001-01	FRAME, LENS	
113	3-846-312-01	SPACER	
114	3-719-601-01	SCREW (B2X5), TAPPING	
* 115	A-7071-829-A	LI-46 BOARD, COMPLETE	
116	3-948-842-01	HOLDER, LI	
* 117	A-7063-975-A	VC-147PLL BOARD, COMPLETE	
* 118	A-7063-974-A	VS-116PLL BOARD, COMPLETE	

Ref. No.	Part No.	Description	Remark
119	3-957-512-01	SHIELD, SL	
* 120	3-954-411-01	SHEET (VS/LE), INSULATING	
* 121	A-7063-978-A	AU-171PLL BOARD, COMPLETE	
* 122	A-7066-021-A	JK-99LL BOARD, COMPLETE	
123	1-751-814-11	CABLE, FLAT (FFC-124)	
* 124	A-7063-976-A	SL-41PLL BOARD, COMPLETE	
125	3-719-381-01	SCREW (M2X4)	
H516	1-550-104-32	HOLDER, BATTERY	
J901	1-537-281-41	TERMINAL BOARD	
W001	1-696-489-11	FP-588 FLEXIBLE BOARD	
W405	1-644-285-11	FP-572 FLEXIBLE BOARD	
W519	1-696-488-11	CABLE, FLAT (FFC-92)	
W521	1-642-186-11	FP-437 FLEXIBLE BOARD	
W522	1-696-490-11	FP-589 FLEXIBLE BOARD	
IC875	A-7030-369-A	CCD BLOCK ASSY (ICX055AK-1)(CCD IMAGER)	
⚠PS901	1-532-841-21	LINK, IC (1.6A PRF1600)	
⚠PS902	1-532-841-21	LINK, IC (1.6A PRF1600)	

5-4. CASSETTE COMPARTMENT ASSEMBLY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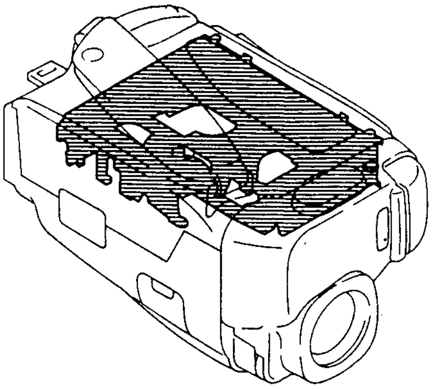
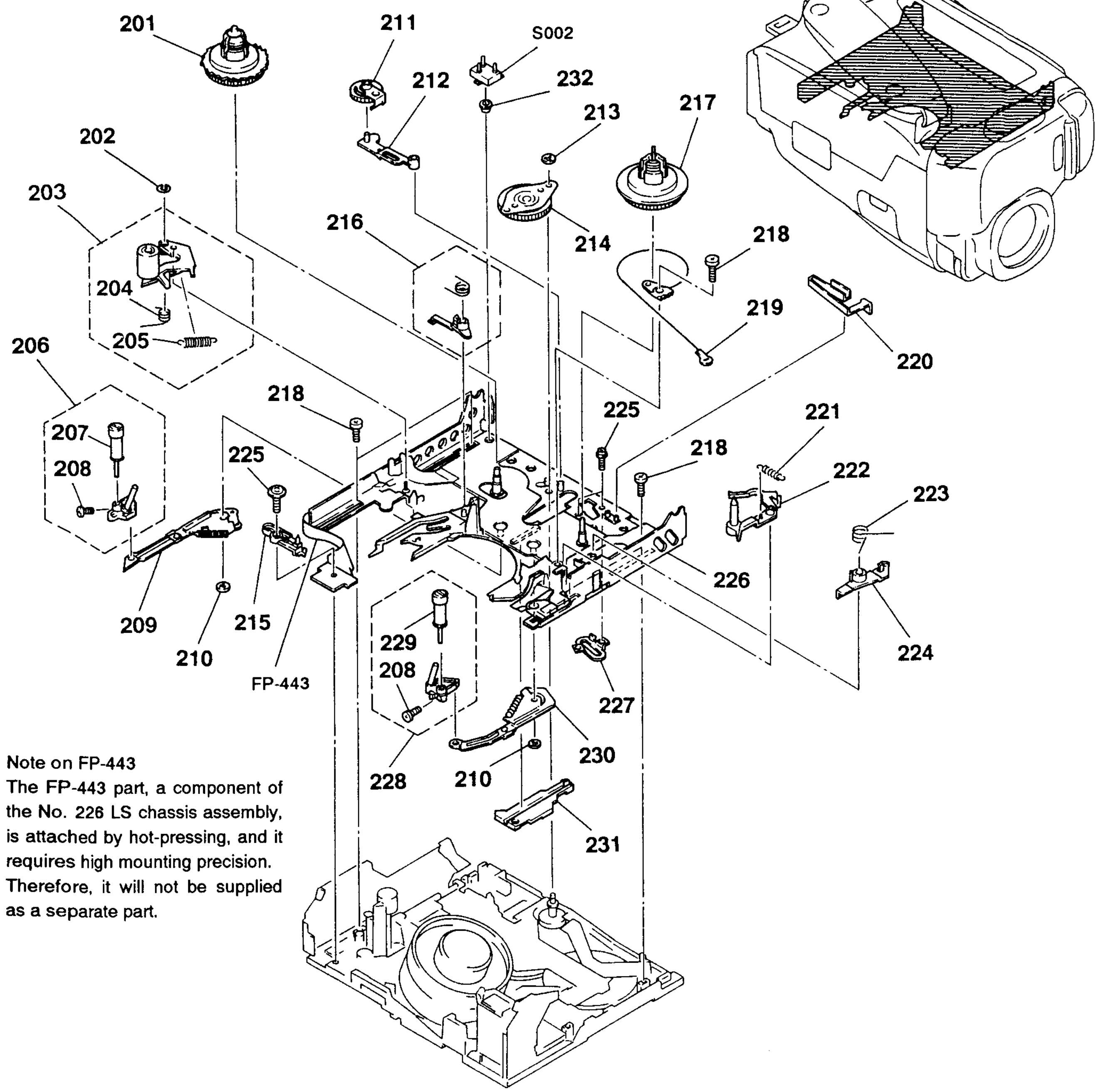


Ref. No.	Part No.	Description	Remark
151	A-7040-312-K	CASSETTE COMPARTMENT BLOCK ASSY	
152	3-945-773-01	BAR, TORSION	
153	3-945-771-01	SPRING, TORSION	
154	X-3941-287-2	DAMPER ASSY	
155	3-315-384-31	WASHER, STOPPER	
156	3-947-503-01	SCREW (M1.4X2.5)	
157	A-7040-309-A	PROTECT (BASE) BLOCK ASSY	
158	3-945-760-01	SPRING, TENSION	
159	3-321-393-01	WASHER, STOPPER	
160	X-3166-813-1	ROLLER ASSY, HC	
161	X-3941-280-1	RETAINER ASSY, GOOSENECK	
162	3-945-733-01	COVER, CAPSTAN	

5-5. LS CHASSIS ASSEMBLY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S002
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232
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FP-443
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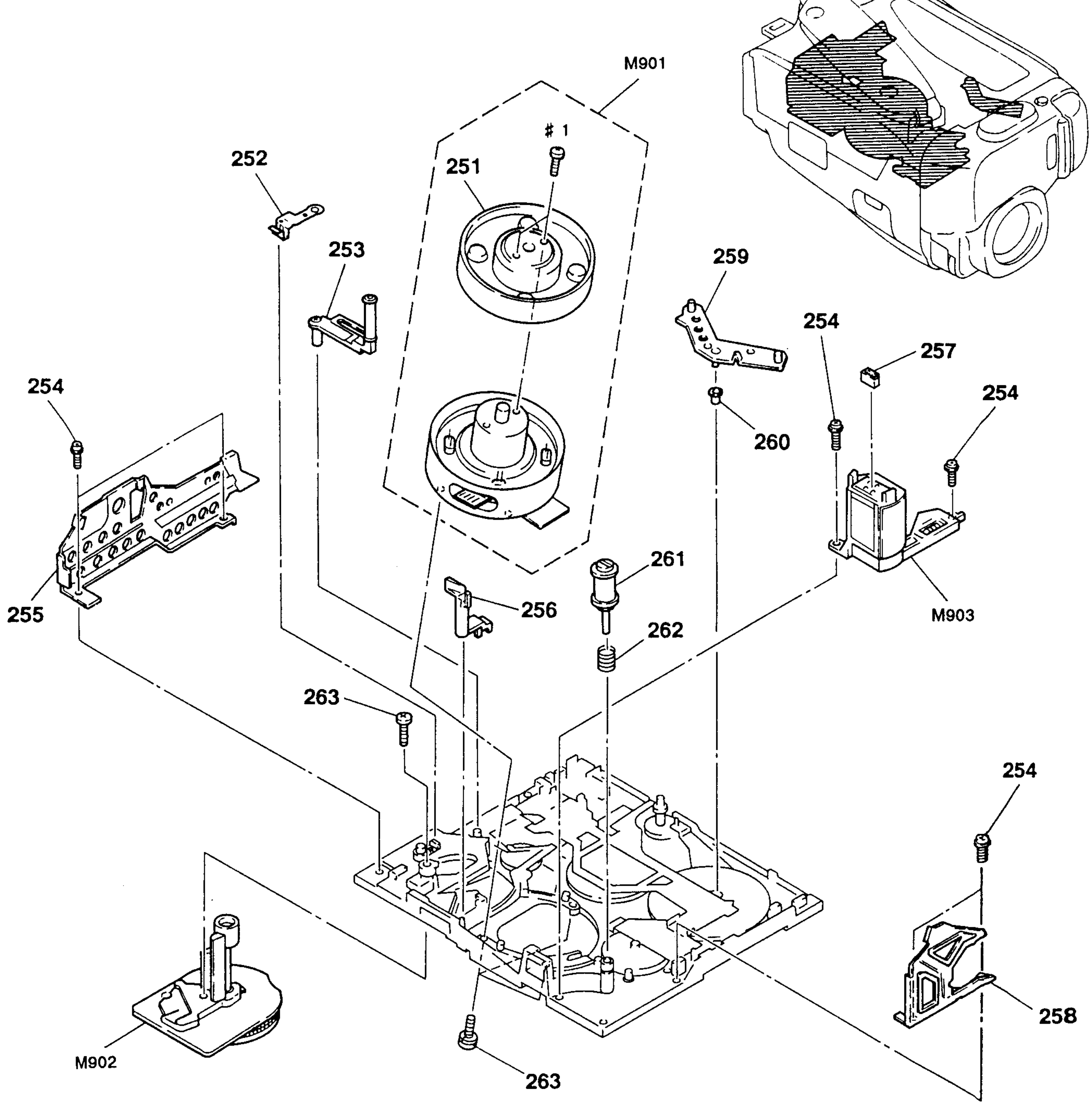
Note on FP-443
The FP-443 part, a component of the No. 226 LS chassis assembly, is attached by hot-pressing, and it requires high mounting precision. Therefore, it will not be supplied as a separate part.

Ref. No.	Part No.	Description	Remark
201	X-3941-274-1	TABLE ASSY, REEL, T	
202	3-331-007-21	WASHER	
203	X-3941-271-5	ARM ASSY, PINCH	
204	3-945-743-01	SPRING, TORSION	
205	3-945-783-01	SPRING, TENSION	
206	A-7040-307-A	GUIDE (BASE) (T) BLOCK ASSY	
207	X-3941-424-1	ROLLER ASSY, TG6	
208	3-947-504-01	SCREW (M1.2X2)	
209	X-3941-267-1	ARM (T) ASSY, GUIDE	
210	3-669-465-00	WASHER (1.5), STOPPER	
211	X-3941-273-1	SOFT ASSY, T	
212	3-945-753-01	ARM, T SOFT	
213	3-726-829-01	WASHER, STOPPER	
214	X-3941-279-5	GEAR ASSY, GOOSENECK	
215	3-947-644-01	RETAINER, TG5 (BASE)	
216	A-7040-321-A	CLAW BLOCK ASSY, T HARD	
217	X-3943-676-1	TABLE ASSY, REEL, S	
218	3-945-756-01	SCREW (M1.4X3)	
219	X-3941-277-1	STRING BLOCK ASSY	
220	3-945-801-01	BRAKE, S SOFT	
221	3-954-327-01	SPRING, TENSION	
222	X-3941-276-1	TG1 ASSY	
223	3-945-752-01	SPRING, TORSION	
224	3-945-799-01	BRAKE, S HARD	
225	3-947-503-01	SCREW (M1.4X2.5)	
226	X-3943-307-1	CHASSIS ASSY, LS	
227	3-945-784-01	PLATE, CAM, LS	
228	A-7040-306-A	GUIDE (BASE) (S) BLOCK ASSY	
229	X-3941-269-1	ROLLER ASSY, TG3	
230	X-3941-266-1	ARM (S) ASSY, GUIDE	
231	3-945-837-01	SLIDER, GL	
232	3-949-881-01	SLEEVE	
S002	1-572-987-11	SWITCH, PUSH (3 KEY) (REC PROOF, ME/MP, MP/MP-HG)	

5-6. MECHANISM CHASSIS ASSEMBLY (1)


M901
# 1
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M903
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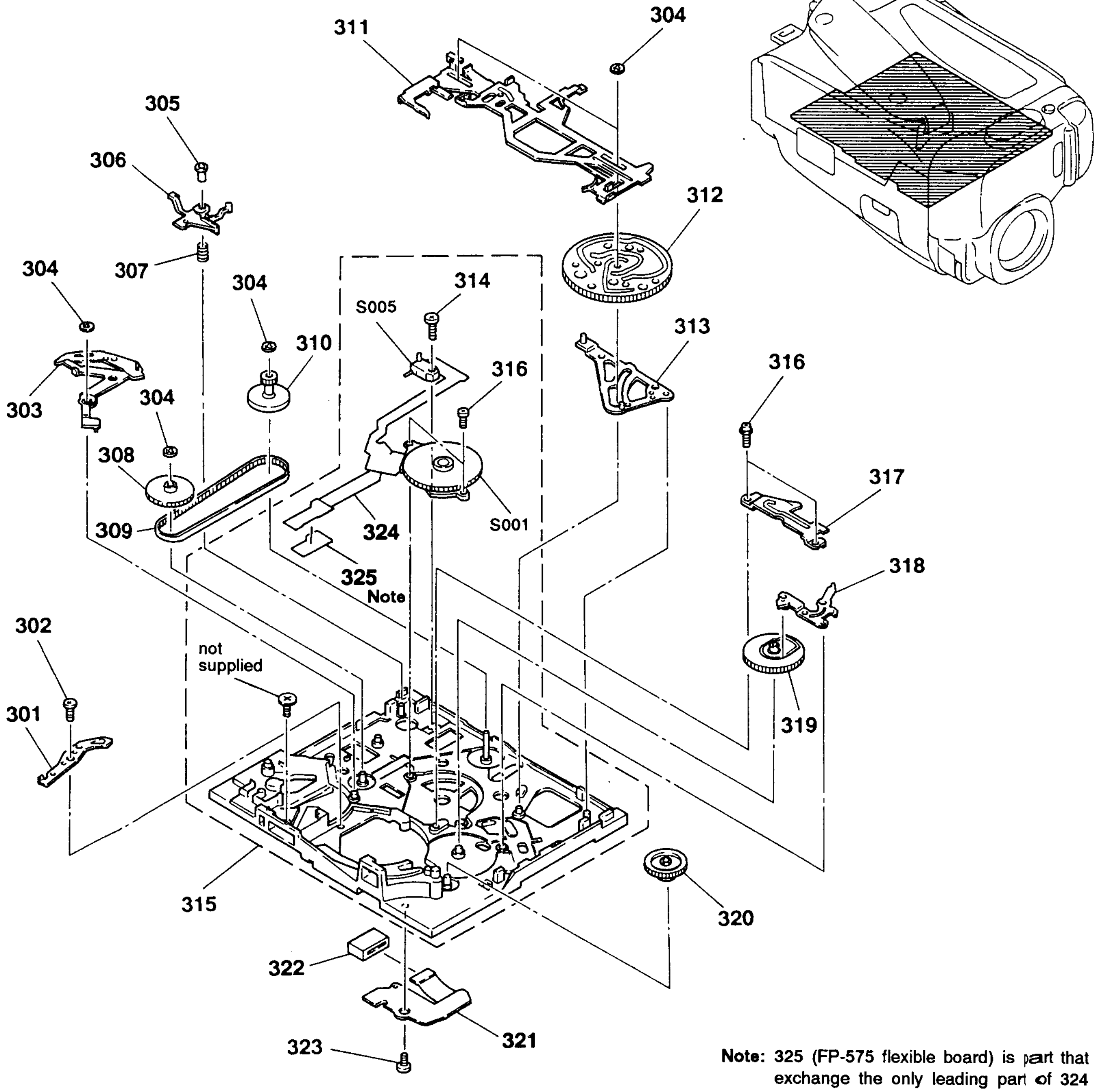
258
M902
263

Ref. No.	Part No.	Description	Remark
251	A-7049-521-A	DRUM ASSY, UPPER (DGR-90-R)	
252	3-945-822-01	SPRING, LEAF, TG7 ARM	
253	A-7040-305-A	ARM BLOCK ASSY, TG7	
254	3-947-503-01	SCREW (M1.4X2.5)	
255	X-3941-255-1	PLATE (T) ASSY, SIDE	
256	3-945-735-01	ARM, HC CONVERSION	
257	1-568-323-11	CONNECTOR, BOARD TO BOARD 4P	
258	3-945-691-01	PLATE (S), SIDE	
259	3-945-701-01	ARM, LS	

Ref. No.	Part No.	Description	Remark
260	3-945-702-01	ROLLER, LS	
261	X-3941-262-1	ROLLER ASSY, TG2	
262	3-956-651-01	SPRING, COMPRESSION	
263	3-686-493-01	SCREW (M2X5), P1	
M901	A-7048-585-A	DRUM ASSY (DGH-90A-R)	
M902	8-835-477-01	MOTOR, DC SCE-0101A (CAPSTAN)	
M903	A-7040-304-A	MOTOR BLOCK ASSY, LM (LOADING)	

5-7. MECHANISM CHASSIS ASSEMBLY (2)


311
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307
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S005
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316
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308
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324
S001
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Note
318
302
not supplied
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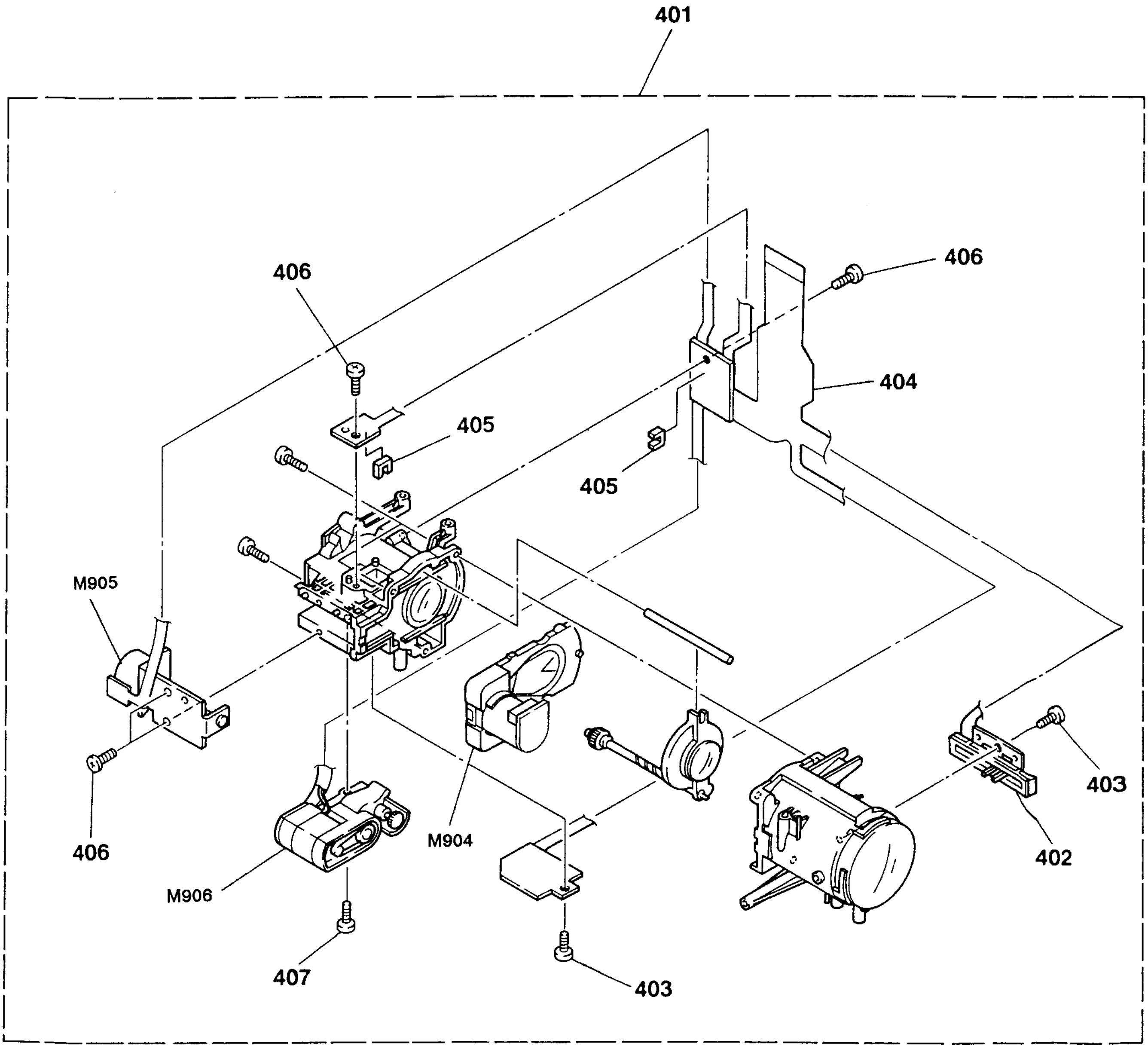
Note: 325 (FP-575 flexible board) is part that exchange the only leading part of 324 (FP-442 flexible board).

Ref. No.	Part No.	Description	Remark
301	3-945-734-01	ARM, HC DRIVING	
302	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
303	X-3941-259-1	ARM ASSY, PINCH PRESS	
304	3-726-829-01	WASHER, STOPPER	
305	3-945-730-01	SLEEVE, EJECT	
306	3-945-706-01	LEVER, EJECT	
307	3-945-729-01	SPRING, COMPRESSION	
308	X-3941-256-1	GEAR ASSY, CHANGE	
309	3-944-539-01	BELT, RELAY	
310	3-945-695-01	PULLEY, RELAY	
311	X-3941-260-1	SLIDER ASSY, M	
312	3-945-696-02	CAM	
313	X-3941-258-1	ARM ASSY, GL	
314	3-713-786-71	SCREW (M2X5)	
315	A-7040-303-A	CHASSIS ASSY, MECHANICAL	
316	3-947-503-01	SCREW (M1.4X2.5)	
317	3-945-722-01	RETAINER, GEAR	
318	X-3941-257-1	ARM ASSY, FF	
319	3-945-697-01	GEAR (B), L	
320	3-945-700-01	GEAR (A), L	
321	1-641-643-12	FP-444 FLEXIBLE BOARD	
322	1-691-254-13	CONNECTOR, TRANSLATION 10P	
323	3-945-756-01	SCREW (M1.4X3)	
324	1-641-639-13	FP-442 FLEXIBLE BOARD	
325	1-645-271-11	FP-575 FLEXIBLE BOARD	
S001	1-572-986-11	SWITCH, ROTARY (ENCODER)	
S005	1-570-771-21	SWITCH (C DOWN)	

5-8. ZOOM LENS ASSEMBLY (VCL-6210WC) (TYPE A)


401
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406
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M905
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402
M904
M906
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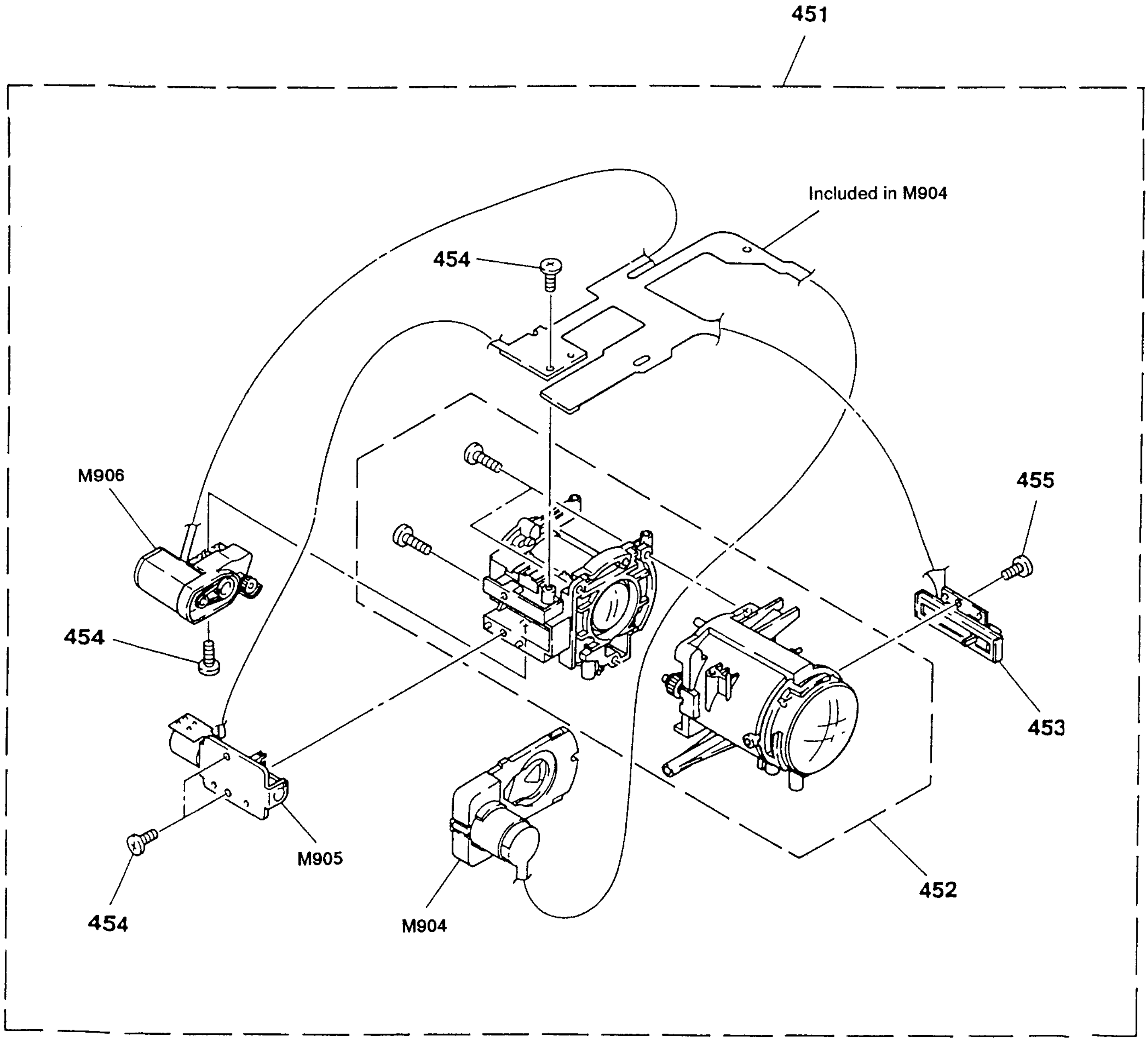
403

Ref. No.	Part No.	Description	Remark
401	1-547-548-11	LENS, ZOOM (VCL-6210WC)(TYPE A)	
402	3-708-446-01	METER, POTENTIAL	
403	3-708-053-01	SCREW, FB FITTING	
404	3-708-493-11	FLEXIBLE	
405	3-708-435-01	PHOTO INTERRUPTER	
406	3-707-946-01	SCREW	
407	3-708-450-01	SCREW, PZ	
M904	3-708-494-11	METER ASSY, IG (IRIS)(TYPE A)	
M905	3-708-491-01	MOTOR ASSY, STEPPING (FOCUS)(TYPE A)	
M906	3-708-492-01	MOTOR ASSY, PZ (ZOOM)(TYPE A)	

5-9. ZOOM LENS ASSEMBLY (VCL-6210WF) (TYPE B)


451
Included in M904
454
M906
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454
453
M905
452
454
M904

Ref. No.	Part No.	Description	Remark
451	1-547-630-11	LENS, ZOOM (VCL-6210WF)(TYPE B)	
452	3-708-652-01	LENS ASSY	
453	3-708-655-01	POTENTIO, ZOOM	
454	3-708-302-01	SCREW, FITTING M.E	
455	3-708-657-01	SCREW, POTENTIOMETER FITTING	

Ref. No.	Part No.	Description	Remark
M904	3-708-653-01	IRIS UNIT (TYPE B)	
M905	3-708-656-01	MOTOR UNIT, FOCUS (TYPE B)	
M906	3-708-654-01	MOTOR UNIT, ZOOM (TYPE B)	

SECTION 6
ELECTRICAL PARTS LIST

AU-171 **CD-116**

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- Hardware (# mark) list is given in the last of this parts list.
- Australian model is abbreviated as AUS.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

Ref. No.	Part No.	Description	Remark
*	A-7063-978-A	AU-171 BOARD, COMPLETE ********************** (Ref. No. 2,000 Series)	
		< CAPACITOR >	
C551	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C552	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C553	1-162-960-11	CERAMIC CHIP 220PF 10% 50V	
C554	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C601	1-126-607-11	ELECT CHIP 47uF 20% 4V	
C605	1-124-778-00	ELECT CHIP 22uF 20% 6.3V	
C607	1-164-222-11	CERAMIC CHIP 0.22uF 25V	
C614	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C615	1-164-373-11	CERAMIC CHIP 0.033uF 25V	
C617	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C618	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C627	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C628	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C629	1-126-607-11	ELECT CHIP 47uF 20% 4V	
C630	1-124-778-00	ELECT CHIP 22uF 20% 6.3V	
C631	1-128-006-11	ELECT CHIP 4.7uF 20% 25V	
C632	1-162-951-11	CERAMIC CHIP 68PF 5% 50V	
C636	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C637	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C639	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C640	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C641	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C643	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C645	1-128-006-11	ELECT CHIP 4.7uF 20% 25V	
C647	1-128-013-11	ELECT CHIP 1uF 20% 50V	
C649	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C651	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	
C655	1-126-205-11	ELECT CHIP 47uF 20% 6.3V	
C657	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C660	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C691	1-128-006-11	ELECT CHIP 4.7uF 20% 25V	
C695	1-128-006-11	ELECT CHIP 4.7uF 20% 25V	
C699	1-124-778-00	ELECT CHIP 22uF 20% 6.3V	
		< CONNECTOR >	
CN601	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	
CN602	1-573-338-11	CONNECTOR, BOARD TO BOARD 20P	
CN604	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	

Ref. No.	Part No.	Description	Remark
		< IC >	
IC601	8-759-823-19	IC CXA1488R	
		< COIL >	
L601	1-410-384-31	INDUCTOR CHIP 18uH	
		< RESISTOR >	
R603	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R604	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R605	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R607	1-216-859-11	METAL GLAZE 1.5M 5% 1/16W	
R614	1-216-817-11	METAL CHIP 470 5% 1/16W	
R615	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R616	1-216-864-11	METAL CHIP 0 5% 1/16W	
R617	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R618	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R619	1-216-864-11	METAL CHIP 0 5% 1/16W	
R620	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R622	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R625	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R630	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R659	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R677	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R679	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R681	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R682	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R691	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R692	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R693	1-216-837-11	METAL CHIP 22K 5% 1/16W	

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Ref. No.	Part No.	Description	Remark
*	A-7063-973-A	CD-116 BOARD, COMPLETE ********************** (Ref. No. 1,000 Series)	
		< CAPACITOR >	
C875	1-135-214-21	TANTAL. CHIP 4.7uF 20% 20V	
C876	1-128-013-11	ELECT CHIP 1uF 20% 50V	
C877	1-128-008-11	ELECT CHIP 3.3uF 20% 35V	
C879	1-162-637-11	CERAMIC CHIP 0.47uF 16V	
C880	1-135-091-21	TANTAL. CHIP 1uF 20% 16V	
C881	1-128-004-11	ELECT CHIP 10uF 20% 16V	

Ref. No.	Part No.	Description	Remark
C882	1-126-607-11	ELECT CHIP 47uF 20% 4V	
C883	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C884	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C888	1-135-214-21	TANTAL. CHIP 4.7uF 20% 20V	
		< CONNECTOR >	
CN875	1-573-308-11	CONNECTOR, BOARD TO BOARD 16P	
		< DIODE >	
D875	8-719-800-76	DIODE 1SS123	
D876	8-719-404-46	DIODE MA110	
D877	8-719-820-05	DIODE 1SS181	
D878	8-719-404-46	DIODE MA110	
		< IC >	
IC875	A-7030-369-A	CCD BLOCK ASSY (AUTO)(ICX055AK-1) (CCD IMAGER)	
		< COIL >	
L875	1-412-064-11	INDUCTOR CHIP 100uH	
		< TRANSISTOR >	
Q875	8-729-425-64	TRANSISTOR 2SD2216Q	
Q876	8-729-427-72	TRANSISTOR XP4501	
Q877	8-729-232-86	TRANSISTOR 2SK1875	
		< RESISTOR >	
R877	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R878	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R879	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R880	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R881	1-216-819-11	METAL CHIP 680 5% 1/16W	
R882	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R883	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R884	1-216-850-11	METAL CHIP 270K 5% 1/16W	
R885	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R886	1-216-809-11	METAL CHIP 100 5% 1/16W	
R887	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	

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Ref. No.	Part No.	Description	Remark
*	A-7072-012-A	CF-34 BOARD, COMPLETE ******************** (Ref. No. 7,000 Series)	
		< CONNECTOR >	
CN993	1-566-540-11	CONNECTOR, FPC (NON ZIF) 8P	
		< DIODE >	
D992	8-719-404-46	DIODE MA110	
		< RESISTOR >	
R994	1-216-295-00	METAL CHIP 0 5% 1/10W	
R996	1-216-295-00	METAL CHIP 0 5% 1/10W	
R999	1-216-295-00	METAL CHIP 0 5% 1/10W	
		< SWITCH >	
S993	1-692-111-11	SWITCH, KEY BOARD (DATE (+))	
S995	1-692-111-11	SWITCH, KEY BOARD (COUNTER RESET)	
S996	1-692-111-11	SWITCH, KEY BOARD (TIME (NEXT))	
S997	1-692-024-21	SWITCH, ROTARY (POWER)	
		< FLEXIBLE BOARD >	
W986	1-696-621-11	FP-590 FLEXIBLE BOARD	

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Ref. No.	Part No.	Description	Remark
*	A-7072-008-A	CN-84 BOARD, COMPLETE ******************** (Ref. No. 6,000 Series)	
		< CONNECTOR >	
CN518	1-573-310-11	CONNECTOR, BOARD TO BOARD 20P	
		< FLAT CABLE >	
W991	1-696-483-11	CABLE, FLAT (FFC-86)	

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Ref. No.	Part No.	Description	Remark
⚠	A-7063-977-A	DD-67 BOARD, COMPLETE ******************** (Ref. No. 1,000 Series)	
		< CAPACITOR >	
C901	1-164-218-11	CERAMIC CHIP 180PF 0.25PF 50V	
C902	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C903	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C904	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C906	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C907	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C909	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C910	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C911	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C912	1-163-017-00	CERAMIC CHIP 0.0047uF 5% 50V	
C914	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C915	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C916	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C917	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C918	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C919	1-128-530-11	ELECT CHIP 33uF 20% 10V	
C920	1-162-928-11	CERAMIC CHIP 120PF 5% 50V	
C921	1-162-928-11	CERAMIC CHIP 120PF 5% 50V	

Be sure to read "Precautions for Replacement of CCD Imager" on page 78 when changing the CCD imager.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

DD-67

Ref. No.	Part No.	Description	Remark
C922	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V
C923	1-135-215-21	TANTAL. CHIP 6.8uF 20%	16V
C924	1-128-004-11	ELECT CHIP 10uF 20%	16V
C925	1-165-178-11	CERAMIC CHIP 6.8uF	16V
C926	1-135-215-21	TANTAL. CHIP 6.8uF 20%	16V
C927	1-128-530-11	ELECT CHIP 33uF 20%	10V
C928	1-165-178-11	CERAMIC CHIP 6.8uF	16V
C929	1-165-178-11	CERAMIC CHIP 6.8uF	16V
C931	1-165-178-11	CERAMIC CHIP 6.8uF	16V
C932	1-165-178-11	CERAMIC CHIP 6.8uF	16V
C933	1-128-530-11	ELECT CHIP 33uF 20%	10V
C934	1-128-530-11	ELECT CHIP 33uF 20%	10V
C935	1-135-177-21	TANTALUM CHIP 1uF 20%	20V
C936	1-135-177-21	TANTALUM CHIP 1uF 20%	20V
C938	1-164-505-11	CERAMIC CHIP 2.2uF	16V
C939	1-164-505-11	CERAMIC CHIP 2.2uF	16V
C940	1-128-004-11	ELECT CHIP 10uF 20%	16V
C942	1-135-177-21	TANTALUM CHIP 1uF 20%	20V
C943	1-135-177-21	TANTALUM CHIP 1uF 20%	20V
C946	1-128-004-11	ELECT CHIP 10uF 20%	16V
C947	1-128-004-11	ELECT CHIP 10uF 20%	16V
C948	1-128-004-11	ELECT CHIP 10uF 20%	16V
C949	1-128-004-11	ELECT CHIP 10uF 20%	16V
C950	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
		< CONNECTOR >	
CN901	1-695-324-11	CONNECTOR, BOARD TO BOARD 42P	
CN902	1-573-506-41	CONNECTOR, FPC (NON ZIF) 4P	
		< DIODE >	
D901	8-719-981-59	DIODE FC805	
D905	8-719-404-46	DIODE MA110	
D906	8-719-404-46	DIODE MA110	
		< IC >	
IC901	8-759-060-94	IC MB3785APFV-G-BND-ER	
		< JACK >	
J901	1-537-281-41	TERMINAL BOARD (BATTERY TERMINAL)	
J902	1-565-276-21	JACK, ULTRA SMALL 1P (REMOTE)	
		< COIL >	
L903	1-424-522-21	COIL, CHOKE 10uH	
L904	1-424-522-21	COIL, CHOKE 10uH	
L905	1-424-522-21	COIL, CHOKE 10uH	
L906	1-424-523-21	COIL, CHOKE 22uH	
L909	1-412-028-11	INDUCTOR CHIP 4.7uH	
L910	1-412-028-11	INDUCTOR CHIP 4.7uH	
L911	1-412-028-11	INDUCTOR CHIP 4.7uH	

Ref. No.	Part No.	Description	Remark
L912	1-424-524-21	COIL, CHOKE 47uH	
L913	1-424-524-21	COIL, CHOKE 47uH	
L914	1-412-034-11	INDUCTOR CHIP 330uH	
L915	1-412-034-11	INDUCTOR CHIP 330uH	
L916	1-412-028-11	INDUCTOR CHIP 4.7uH	
		< IC LINK >	
⚠PS901	1-532-841-21	LINK, IC (1.6A PRF1600)	
⚠PS902	1-532-841-21	LINK, IC (1.6A PRF1600)	
		< TRANSISTOR >	
Q901	8-729-403-27	TRANSISTOR XN4401	
Q902	8-729-402-42	TRANSISTOR UN5213	
Q903	8-729-823-84	TRANSISTOR FP102	
Q904	8-729-804-41	TRANSISTOR 2SB1122-S	
Q905	8-729-823-82	TRANSISTOR FP101	
Q906	8-729-823-82	TRANSISTOR FP101	
Q907	8-729-402-81	TRANSISTOR XN4501	
Q908	8-729-805-25	TRANSISTOR 2SB1121	
Q909	8-729-805-25	TRANSISTOR 2SB1121	
Q910	8-729-403-35	TRANSISTOR UN5113	
		< RESISTOR >	
R901	1-216-837-11	METAL CHIP 22K 5%	1/16W
R902	1-218-871-11	METAL CHIP 10K 0.50%	1/16W
R903	1-216-837-11	METAL CHIP 22K 5%	1/16W
R904	1-218-853-11	METAL CHIP 1.8K 0.50%	1/16W
R905	1-218-879-11	METAL CHIP 22K 0.50%	1/16W
R906	1-218-863-11	METAL CHIP 4.7K 0.50%	1/16W
R907	1-216-818-11	METAL CHIP 560 5%	1/16W
R908	1-216-847-11	METAL CHIP 150K 5%	1/16W
R909	1-216-827-11	METAL CHIP 3.3K 5%	1/16W
R910	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R911	1-216-838-11	METAL CHIP 27K 5%	1/16W
R912	1-216-840-11	METAL CHIP 39K 5%	1/16W
R914	1-216-831-11	METAL CHIP 6.8K 5%	1/16W
R915	1-216-823-11	METAL CHIP 1.5K 5%	1/16W
R916	1-216-833-11	METAL CHIP 10K 5%	1/16W
R917	1-218-871-11	METAL CHIP 10K 0.50%	1/16W
R918	1-216-811-11	METAL CHIP 150 5%	1/16W
R919	1-218-871-11	METAL CHIP 10K 0.50%	1/16W
R920	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R921	1-216-841-11	METAL CHIP 47K 5%	1/16W
R922	1-216-833-11	METAL CHIP 10K 5%	1/16W
R923	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R924	1-216-823-11	METAL CHIP 1.5K 5%	1/16W
R925	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R926	1-216-833-11	METAL CHIP 10K 5%	1/16W
R927	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R928	1-216-843-11	METAL CHIP 68K 5%	1/16W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
R929	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R930	1-216-182-91	METAL GLAZE 220 5% 1/8W	
R931	1-216-182-91	METAL GLAZE 220 5% 1/8W	
R932	1-216-182-91	METAL GLAZE 220 5% 1/8W	
R933	1-216-194-00	METAL CHIP 680 5% 1/8W	
R935	1-216-864-11	METAL CHIP 0 5% 1/16W	
R936	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R937	1-216-864-11	METAL CHIP 0 5% 1/16W	
R938	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R939	1-218-883-11	METAL CHIP 33K 0.50% 1/16W	
R940	1-218-877-11	METAL CHIP 18K 0.50% 1/16W	
R941	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R942	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R943	1-216-296-00	METAL CHIP 0 5% 1/8W	
R944	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R945	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R946	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R949	1-216-296-00	METAL CHIP 0 5% 1/8W	
R950	1-216-864-11	METAL CHIP 0 5% 1/16W	
R951	1-216-296-00	METAL CHIP 0 5% 1/8W	
R952	1-216-864-11	METAL CHIP 0 5% 1/16W	
R953	1-216-864-11	METAL CHIP 0 5% 1/16W	

< SWITCH >

Ref. No.	Part No.	Description	Remark
S901	1-572-467-21	SWITCH, PUSH (1 KEY)(EJECT)	

< TRANSFORMER >

Ref. No.	Part No.	Description	Remark
T901	1-450-874-21	TRANSFORMER, DC-DC CONVERTER	

****

* A-7072-013-A ED-37 BOARD, COMPLETE

****

(Ref. No. 8,000 Series)

< FLEXIBLE BOARD >

Ref. No.	Part No.	Description	Remark
W987	1-696-622-11	FP-591 FLEXIBLE BOARD	

****

* A-7066-021-A JK-99 BOARD, COMPLETE

****

(Ref. No. 3,000 Series)

Ref. No.	Part No.	Description	Remark
	3-884-171-00	STOPPER	

< JACK >

Ref. No.	Part No.	Description	Remark
J517	1-537-649-11	TERMINAL BOARD (VIDEO/AUDIO OUT)	

< FLAT CABLE >

Ref. No.	Part No.	Description	Remark
W517	1-751-814-11	CABLE, FLAT (FFC-124)	

****

* A-7071-829-A LI-46 BOARD, COMPLETE

****

(Ref. No. 4,000 Series)

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
* CN516	1-580-055-11	PIN, CONNECTOR 2P (LITHIUM)	

< BATTERY HOLDER >

Ref. No.	Part No.	Description	Remark
H516	1-550-104-32	HOLDER, BATTERY	

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LS-33 BOARD (Ref. No. 9,000 Series)

****

< DIODE >

Ref. No.	Part No.	Description	Remark
D001	8-719-989-52	DIODE GL4600S	

< HOLE ELEMENT >

Ref. No.	Part No.	Description	Remark
H001	8-719-987-62	DIODE LT140SAZ	
H002	8-719-987-62	DIODE LT140SAZ	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q001	8-729-012-46	TRANSISTOR PT4600FS	
Q002	8-729-012-46	TRANSISTOR PT4600FS	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R003	1-216-033-00	METAL CHIP 220 5% 1/10W	
R004	1-216-033-00	METAL CHIP 220 5% 1/10W	
R010	1-216-033-00	METAL CHIP 220 5% 1/10W	
R011	1-216-033-00	METAL CHIP 220 5% 1/10W	

< SWITCH >

Ref. No.	Part No.	Description	Remark
S002	1-572-987-11	SWITCH, PUSH (3 KEY) (REC PROOF, ME/MP, MPHG)	

****

* A-7063-979-A MA-206 BOARD, COMPLETE

****

(Ref. No. 2,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C555	1-162-587-11	CERAMIC CHIP 0.039uF 10% 25V	
C556	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C557	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C558	1-162-638-11	CERAMIC CHIP 1uF 16V	
C562	1-162-638-11	CERAMIC CHIP 1uF 16V	
C563	1-126-205-11	ELECT CHIP 47uF 20% 6.3V	

	Ref. No.	Part No.	Description			Remark
	C566	1-162-638-11	CERAMIC CHIP	1uF		16V
	C569	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V
			< CONNECTOR >			
	CN551	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P			
*	CN552	1-580-056-11	PIN, CONNECTOR 3P			
			< DIODE >			
	D552	8-719-404-46	DIODE MA110			
			< IC >			
	IC551	8-759-822-37	IC LA7293M			
			< JACK >			
	J551	1-568-027-11	JACK, SMALL TYPE 1P (MIC)			
			< COIL >			
	L571	1-410-192-51	INDUCTOR CHIP 1uH			
	L572	1-410-192-51	INDUCTOR CHIP 1uH			
			< TRANSISTOR >			
	Q551	8-729-230-60	TRANSISTOR 2SA1586			
			< RESISTOR >			
	R551	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
	R552	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
	R553	1-216-838-11	METAL CHIP	27K	5%	1/16W
	R554	1-216-838-11	METAL CHIP	27K	5%	1/16W
	R555	1-216-864-11	METAL CHIP	0	5%	1/16W
	R556	1-216-864-11	METAL CHIP	0	5%	1/16W
	R558	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
	R564	1-216-295-00	METAL CHIP	0	5%	1/10W
	R565	1-216-821-11	METAL CHIP	1K	5%	1/16W
	R566	1-216-864-11	METAL CHIP	0	5%	1/16W

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* A-7072-009-A MF-214 BOARD, COMPLETE
****
(Ref. No. 5,000 Series)

Ref. No.	Part No.	Description
		< DIODE >
D971	8-719-404-46	DIODE MA110
		< SWITCH >
S973	1-572-467-21	SWITCH, PUSH (1 KEY)(LENS OPEN/CLOSE)
		< FLAT CABLE >
W971	1-696-484-11	CABLE, FLAT (FFC-87)

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* A-7063-976-A SL-41 BOARD, COMPLETE
****
(Ref. No. 5,000 Series)

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C521	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C522	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C523	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C524	1-128-013-11	ELECT CHIP	1uF	20%	50V
C525	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C526	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C527	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
		< CONNECTOR >			
CN521	1-691-482-21	CONNECTOR, FFC/FPC 15P			
CN522	1-691-472-21	CONNECTOR, FFC/FPC 6P			
CN523	1-691-473-21	CONNECTOR, FFC/FPC 7P			
		< IC >			
IC521	8-759-059-09	IC LB8111V			
		< TRANSISTOR >			
Q521	8-729-402-81	TRANSISTOR XN4501			
		< RESISTOR >			
R522	1-216-845-11	METAL CHIP	100K	5%	1/16W
R523	1-216-845-11	METAL CHIP	100K	5%	1/16W
R524	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R525	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R528	1-216-845-11	METAL CHIP	100K	5%	1/16W
R530	1-216-840-11	METAL CHIP	39K	5%	1/16W
R532	1-216-174-00	METAL GLAZE	100	5%	1/8W
R533	1-216-864-11	METAL CHIP	0	5%	1/16W
		< COMPOSITION CIRCUIT BLOCK >			
RB521	1-236-424-11	NETWORK, RES 10K			
RB522	1-236-424-11	NETWORK, RES 10K			
		< FLEXIBLE BOARD >			
W521	1-642-186-11	FP-437 FLEXIBLE BOARD			
W522	1-696-490-11	FP-589 FLEXIBLE BOARD			

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Ref. No.	Part No.	Description	Remark
*	A-7071-828-A	SW-223 BOARD, COMPLETE	
		************************	
		(Ref. No. 7,000 Series)	
		< SWITCH >	
S519	1-553-977-00	SWITCH, SLIDE (STANDBY)	
S520	1-571-315-11	SWITCH, KEY BOARD (START/STOP)	
		< FLAT CABLE >	
W519	1-696-488-11	CABLE, FLAT (FFC-92)	

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Ref. No.	Part No.	Description			Remark
*	A-7063-975-A	VC-147 BOARD, COMPLETE			
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		(Ref. No. 3,000 Series)			
		< CAPACITOR >			
C701	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C702	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C703	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C705	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C706	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C707	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C708	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C709	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C711	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C712	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C713	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C716	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C717	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C718	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C719	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C721	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C722	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C723	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C724	1-164-634-11	CERAMIC CHIP	1uF		16V
C725	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C726	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C727	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C728	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C729	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C730	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C733	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C734	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C735	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C737	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C738	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C739	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C741	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C742	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C749	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C750	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C751	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C752	1-162-943-11	CERAMIC CHIP	15PF	5%	50V
C801	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C802	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C803	1-163-077-91	CERAMIC CHIP	0.1uF		50V
C804	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C805	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C806	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C807	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C808	1-135-091-21	TANTAL. CHIP	1uF	20%	16V
C809	1-163-077-91	CERAMIC CHIP	0.1uF		50V
C810	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C811	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C813	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C814	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C815	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C817	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C818	1-135-091-21	TANTAL. CHIP	1uF	20%	16V
C819	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C820	1-135-091-21	TANTAL. CHIP	1uF	20%	16V
C821	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C823	1-135-091-21	TANTAL. CHIP	1uF	20%	16V
C824	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C826	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C827	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C830	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C832	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C833	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C834	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C835	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C836	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C837	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C838	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C839	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C841	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C851	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C852	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C853	1-164-634-11	CERAMIC CHIP	1uF		16V
C854	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C855	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C856	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C857	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C858	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C859	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C860	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C861	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C862	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C863	1-162-974-11	CERAMIC CHIP	0.01uF		50V

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Ref. No.	Part No.	Description	Remark
C864	1-162-638-11	CERAMIC CHIP 1uF	16V
C866	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C868	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C869	1-164-173-11	CERAMIC CHIP 0.0039uF 10%	50V
C870	1-164-005-11	CERAMIC CHIP 0.47uF	25V
C871	1-164-634-11	CERAMIC CHIP 1uF	16V
		< CONNECTOR >	
CN701	1-573-372-21	CONNECTOR, BOARD TO BOARD 18P	
CN801	1-573-336-11	CONNECTOR, BOARD TO BOARD 16P	
CN851	1-573-361-11	CONNECTOR, FFC/FPC 21P	
		< TRIMMER >	
CT801	1-141-356-11	CAP, ADJ 6P	
		< FILTER >	
FL701	1-236-834-21	FILTER, LOW PASS	
FL702	1-415-751-21	DELAY LINE, LC (YH)	
		< IC >	
IC701	8-759-243-19	IC TC7SU04F	
IC702	8-759-064-36	IC MB88346BPFV	
IC703	8-759-710-07	IC NJM2234M	
IC704	8-752-358-10	IC CXD2101BR	
IC705	8-759-069-18	IC CXD2103AR	
IC706	8-752-355-56	IC CXD2104BN	
IC707	8-752-347-93	IC CXD2100AQ	
IC709	8-752-840-64	IC CXP80624-434R	
IC712	8-759-159-70	IC BR9021BF	
IC801	8-752-350-16	IC CXD1257AR	
IC802	8-752-060-50	IC CXA1577R	
IC803	8-752-053-26	IC CXA1399Q	
IC804	8-752-327-48	IC CXD1250N	
IC805	8-752-054-61	IC CXA1390AR	
IC851	8-759-701-24	IC NJM3414M	
IC852	8-759-060-00	IC LM324DR	
IC853	8-759-058-47	IC MPC1724VM	
IC854	8-759-823-51	IC LB1830M	
IC856	8-759-998-98	IC LM358D	
		< COIL >	
L701	1-412-006-31	INDUCTOR CHIP 10uH	
L704	1-412-006-31	INDUCTOR CHIP 10uH	
L706	1-412-062-11	INDUCTOR CHIP 47uH	
L708	1-412-979-21	INDUCTOR 1uH	
L711	1-412-058-11	INDUCTOR CHIP 10uH	
L714	1-412-006-31	INDUCTOR CHIP 10uH	
L715	1-412-058-11	INDUCTOR CHIP 10uH	
L717	1-412-058-11	INDUCTOR CHIP 10uH	
L720	1-412-006-31	INDUCTOR CHIP 10uH	

Ref. No.	Part No.	Description	Remark
L721	1-410-392-11	INDUCTOR CHIP 82uH	
L801	1-412-029-11	INDUCTOR CHIP 10uH	
L802	1-412-006-31	INDUCTOR CHIP 10uH	
L803	1-412-058-11	INDUCTOR CHIP 10uH	
L804	1-412-058-11	INDUCTOR CHIP 10uH	
L851	1-412-058-11	INDUCTOR CHIP 10uH	
L853	1-412-031-11	INDUCTOR CHIP 47uH	
		< TRANSISTOR >	
Q701	8-729-928-87	TRANSISTOR DTC124EE	
Q702	8-729-427-74	TRANSISTOR XP4601	
Q703	8-729-427-74	TRANSISTOR XP4601	
Q704	8-729-425-50	TRANSISTOR 2SB1462Q	
Q706	8-729-425-64	TRANSISTOR 2SD2216Q	
Q707	8-729-428-84	TRANSISTOR UN9111	
Q708	8-729-425-64	TRANSISTOR 2SD2216Q	
Q709	8-729-427-72	TRANSISTOR XP4501	
Q801	8-729-425-64	TRANSISTOR 2SD2216Q	
Q802	8-729-427-70	TRANSISTOR XP4401	
Q851	8-729-425-64	TRANSISTOR 2SD2216Q	
Q852	8-729-013-88	TRANSISTOR RN1302-TE85L	
Q853	8-729-427-70	TRANSISTOR XP4401	
		< RESISTOR >	
R701	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R702	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R703	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R704	1-216-815-11	METAL CHIP 330 5% 1/16W	
R705	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R706	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R707	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R708	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R709	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R710	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R711	1-216-864-11	METAL CHIP 0 5% 1/16W	
R712	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R713	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R714	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R715	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R716	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R718	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R719	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R721	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R722	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R723	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R724	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R725	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R727	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R728	1-216-864-11	METAL CHIP 0 5% 1/16W	

Ref.No.	Part No.	Description				Remark
R729	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R730	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R731	1-216-295-00	METAL CHIP	0	5%	1/10W	
R732	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R733	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R734	1-216-817-11	METAL CHIP	470	5%	1/16W	
R735	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R736	1-216-864-11	METAL CHIP	0	5%	1/16W	
R738	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R739	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R742	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R744	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R745	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R748	1-216-864-11	METAL CHIP	0	5%	1/16W	
R749	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R750	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R751	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R752	1-216-817-11	METAL CHIP	470	5%	1/16W	
R753	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R754	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R755	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R756	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R757	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R758	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R759	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R760	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R761	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R762	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R769	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R770	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R771	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R775	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R776	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R777	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R778	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R779	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R781	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R782	1-216-813-11	METAL CHIP	220	5%	1/16W	
R783	1-216-863-11	METAL GLAZE	3.3M	5%	1/16W	
R784	1-216-817-11	METAL CHIP	470	5%	1/16W	
R785	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R787	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R791	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R792	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R793	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R794	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R795	1-216-815-11	METAL CHIP	330	5%	1/16W	
R796	1-216-817-11	METAL CHIP	470	5%	1/16W	
R797	1-216-818-11	METAL CHIP	560	5%	1/16W	
R800	1-216-017-00	METAL CHIP	47	5%	1/10W	

Ref.No.	Part No.	Description				Remark
R801	1-216-864-11	METAL CHIP	0	5%	1/16W	
R802	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R803	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R804	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R805	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R806	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R807	1-216-817-11	METAL CHIP	470	5%	1/16W	
R808	1-216-801-11	METAL CHIP	22	5%	1/16W	
R809	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R810	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R812	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R813	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R816	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R819	1-216-805-11	METAL CHIP	47	5%	1/16W	
R821	1-216-863-11	METAL GLAZE	3.3M	5%	1/16W	
R823	1-218-876-11	METAL CHIP	16K	0.50%	1/16W	
R825	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R826	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R827	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R828	1-218-871-11	METAL CHIP	10K	0.50%	1/16W	
R829	1-218-899-11	METAL CHIP	150K	0.50%	1/16W	
R830	1-218-847-11	METAL CHIP	1K	0.50%	1/16W	
R831	1-216-864-11	METAL CHIP	0	5%	1/16W	
R833	1-216-295-00	METAL CHIP	0	5%	1/10W	
R851	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R852	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R853	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R854	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R855	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R856	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R857	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R858	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R859	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R860	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R861	1-218-879-11	METAL CHIP	22K	0.50%	1/16W	
R862	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R863	1-216-855-11	METAL CHIP	680K	5%	1/16W	
R864	1-216-134-00	METAL CHIP	2.2	5%	1/8W	
R865	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R866	1-216-820-11	METAL CHIP	820	5%	1/16W	
R867	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R868	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R869	1-218-881-11	METAL CHIP	27K	0.50%	1/16W	
R870	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R871	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R872	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R873	1-216-814-11	METAL CHIP	270	5%	1/16W	
R874	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R875	1-216-296-00	METAL CHIP	0	5%	1/8W	
R876	1-216-864-11	METAL CHIP	0	5%	1/16W	

Ref. No.	Part No.	Description	Remark
R890	1-216-296-00	METAL CHIP 0 5% 1/8W	
R891	1-216-296-00	METAL CHIP 0 5% 1/8W	
		< NETWORK >	
RB701	1-236-420-11	NETWORK, RES 4.7K	
RB702	1-236-432-11	NETWORK, RES 47K	
RB703	1-236-412-11	NETWORK, RES 1.0K	
RB704	1-236-416-11	NETWORK, RES 2.2K	
RB705	1-236-416-11	NETWORK, RES 2.2K	
RB706	1-236-412-11	NETWORK, RES 1.0K	
RB707	1-236-412-11	NETWORK, RES 1.0K	
RB708	1-236-412-11	NETWORK, RES 1.0K	
		< VIBRATOR >	
X701	1-579-553-11	VIBRATOR 12MHz	
X801	1-579-621-11	VIBRATOR, CRYSTAL 28.375MHz	
**			
*	A-7063-220-A	VF-42 BOARD, COMPLETE ********************** (Ref. No. 1,000 Series)	
	3-942-888-01	HOLDER, LED	
		< CAPACITOR >	
C501	1-126-176-11	ELECT 220uF 20% 10V	
C502	1-163-077-91	CERAMIC CHIP 0.1uF 50V	
C503	1-163-109-00	CERAMIC CHIP 47PF 5% 50V	
⚠C504	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
⚠C505	1-164-758-11	CERAMIC CHIP 0.0039uF 5% 50V	
⚠C506	1-164-715-11	CERAMIC CHIP 0.0068uF 5% 50V	
C507	1-127-515-11	ELECT(SOLID) 47uF 20% 6.3V	
C508	1-164-611-11	CERAMIC CHIP 0.001uF 10% 500V	
C509	1-124-257-00	ELECT 2.2uF 20% 50V	
C510	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C511	1-126-090-11	ELECT 82uF 20% 10V	
C512	1-137-306-11	FILM CHIP 0.1uF 5% 16V	
C513	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C514	1-131-381-00	TANTALUM 47uF 10% 10V	
C515	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C516	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
		< CONNECTOR >	
* CN501	1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P	
* CN502	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
* CN503	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
		< DIODE >	
D501	8-719-820-65	DIODE TLS221	
D502	8-719-984-02	LED BR4371F (TALLY)	
D503	8-719-400-20	DIODE MA152WA	
		< IC >	
IC501	8-759-420-01	IC AN2512S	
		< COIL >	
L501	1-408-976-21	INDUCTOR 33uH	
L502	1-408-785-21	INDUCTOR CHIP 47uH	
⚠L503	1-459-876-41	COIL, FERRITE (HLC)	
		< TRANSISTOR >	
Q501	8-729-120-28	TRANSISTOR 2SC1623	
Q502	8-729-216-31	TRANSISTOR 2SA1163-G	
Q504	8-729-106-68	TRANSISTOR 2SD1615A-GP	
		< RESISTOR >	
R501	1-216-033-00	METAL CHIP 220 5% 1/10W	
R502	1-216-041-00	METAL CHIP 470 5% 1/10W	
R503	1-216-041-00	METAL CHIP 470 5% 1/10W	
R506	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R507	1-216-047-00	METAL CHIP 820 5% 1/10W	
R508	1-216-689-11	METAL CHIP 39K 0.5% 1/10W	
R509	1-216-689-11	METAL CHIP 39K 0.5% 1/10W	
R510	1-216-005-00	METAL CHIP 15 5% 1/10W	
R511	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R512	1-216-131-11	METAL CHIP 2.7M 5% 1/10W	
R513	1-216-101-00	METAL CHIP 150K 5% 1/10W	
R514	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R515	1-216-131-11	METAL CHIP 2.7M 5% 1/10W	
R516	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R517	1-216-025-00	METAL CHIP 100 5% 1/10W	
R518	1-216-308-00	METAL CHIP 4.7 5% 1/10W	
R519	1-216-336-11	METAL CHIP 47K 1% 1/10W	
R520	1-216-107-00	METAL CHIP 270K 5% 1/10W	
R521	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R522	1-216-160-00	METAL GLAZE 27 5% 1/8W	
R523	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R524	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R525	1-216-097-00	METAL CHIP 100K 5% 1/10W	
		< VARIABLE RESISTOR >	
RV501	1-241-596-11	RES, ADJ, METAL GRAZE 47K	
RV502	1-241-590-11	RES, ADJ, METAL GRAZE 470	
RV503	1-241-592-11	RES, ADJ, METAL GRAZE 2.2K	
RV504	1-228-762-00	RES, ADJ, METAL GLAZE 1M	
		< TRANSFORMER >	
⚠T501	1-439-486-11	TRANSFORMER ASSY, FLYBACK	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
		< THERMISTOR >			
TH501	1-809-350-21	THERMISTOR, NTC (2125)			
		< SOCKET >			
⚠W501	1-540-019-21	SOCKET ASSY, CRT			
**					
*	A-7072-010-A	VK-32 BOARD, COMPLETE *********************			
					(Ref. No. 9,000 Series)
		< DIODE >			
D977	8-719-420-14	DIODE MA8082-M			
D978	8-719-420-14	DIODE MA8082-M			
D979	8-719-420-14	DIODE MA8082-M			
D980	8-719-420-14	DIODE MA8082-M			
D981	8-719-420-14	DIODE MA8082-M			
		< SWITCH >			
S976	1-572-921-31	SWITCH, KEY BOARD (■ STOP)			
S979	1-572-921-31	SWITCH, KEY BOARD (◀◀ REW)			
S980	1-572-921-31	SWITCH, KEY BOARD (▷ PLAY)			
S983	1-572-921-31	SWITCH, KEY BOARD (▶▶ FF)			
S984	1-572-921-31	SWITCH, KEY BOARD (▮▮ PAUSE)			
**					
*	A-7063-974-A	VS-116 BOARD, COMPLETE **********************			
					(Ref. No. 4,000 Series)
	1-691-471-11	CONNECTOR, TRANSLATION 11P			
		< CAPACITOR >			
C001	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C002	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C003	1-162-955-11	CERAMIC CHIP	150PF	5%	50V
C004	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C005	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C006	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C009	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C010	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C011	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C012	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C013	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C014	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C018	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C019	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C020	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C021	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C022	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C023	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C024	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C025	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C026	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C027	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C028	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C029	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C030	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C035	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C049	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C057	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C058	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C059	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C061	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C063	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C064	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C065	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C066	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C067	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C068	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C069	1-162-948-11	CERAMIC CHIP	39PF	5%	50V
C070	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C072	1-162-943-11	CERAMIC CHIP	15PF	5%	50V
C073	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C074	1-162-956-11	CERAMIC CHIP	180PF	5%	50V
C075	1-162-942-11	CERAMIC CHIP	12PF	5%	50V
C077	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C078	1-162-934-11	CERAMIC CHIP	3PF	0.25PF	50V
C080	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C081	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C082	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C083	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C085	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C086	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C091	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C092	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C121	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C122	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C123	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C124	1-164-346-11	CERAMIC CHIP	1uF		16V
C125	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C126	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C127	1-164-145-11	CERAMIC CHIP	390PF	5%	50V
C128	1-162-943-11	CERAMIC CHIP	15PF	5%	50V
C129	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C130	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C132	1-163-118-00	CERAMIC CHIP	110PF	5%	50V
C133	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C135	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C136	1-162-974-11	CERAMIC CHIP	0.01uF		50V

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Replace only with part number specified.

VS-116

Ref. No.	Part No.	Description			Remark
C137	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C150	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C151	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C156	1-162-948-11	CERAMIC CHIP	39PF	5%	50V
C159	1-162-946-11	CERAMIC CHIP	27PF	5%	50V
C161	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C167	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C170	1-162-568-11	CERAMIC CHIP	0.33uF		25V
C171	1-162-638-11	CERAMIC CHIP	1uF		16V
C173	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C175	1-128-004-11	ELECT CHIP	10uF	20%	16V
C176	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C177	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C178	1-164-145-11	CERAMIC CHIP	390PF	5%	50V
C179	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C180	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C181	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C182	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C187	1-162-943-11	CERAMIC CHIP	15PF	5%	50V
C188	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C189	1-164-362-11	CERAMIC CHIP	470PF	5%	50V
C192	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C193	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C194	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C199	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C205	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C206	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C207	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C208	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C209	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C213	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C214	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C216	1-128-004-11	ELECT CHIP	10uF	20%	16V
C217	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C218	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C219	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C220	1-126-246-11	ELECT CHIP	220uF	20%	4V
C221	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C222	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C223	1-128-004-11	ELECT CHIP	10uF	20%	16V
C225	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C226	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C227	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C228	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C229	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C230	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C231	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C232	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C233	1-128-004-11	ELECT CHIP	10uF	20%	16V
C234	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C235	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C236	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C237	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C238	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C239	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C240	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C241	1-126-607-11	ELECT CHIP	47uF	20%	4V
C242	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
C245	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C246	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C247	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C248	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C249	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C250	1-164-145-11	CERAMIC CHIP	390PF	5%	50V
C255	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C256	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C257	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C259	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C260	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C261	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C262	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C263	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C264	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C265	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C266	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C267	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C268	1-162-955-11	CERAMIC CHIP	150PF	5%	50V
C269	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C270	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C271	1-128-004-11	ELECT CHIP	10uF	20%	16V
C272	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C273	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C276	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C277	1-162-941-11	CERAMIC CHIP	10PF	0.5PF	50V
C278	1-162-638-11	CERAMIC CHIP	1uF		16V
C280	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C281	1-135-146-21	TANTALUM CHIP	0.68uF	20%	25V
C282	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C283	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C284	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C285	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C286	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C288	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C289	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C290	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C291	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C292	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C294	1-162-638-11	CERAMIC CHIP	1uF		16V
C295	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C296	1-162-974-11	CERAMIC CHIP	0.01uF		50V

Ref. No.	Part No.	Description			Remark
C297	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C298	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C299	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C300	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C301	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C303	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C304	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C305	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C306	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C307	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C401	1-164-346-11	CERAMIC CHIP	1uF		16V
C403	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C404	1-164-346-11	CERAMIC CHIP	1uF		16V
C405	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C406	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C408	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C409	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C412	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C413	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C414	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C415	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C416	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C417	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C418	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C421	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C422	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C423	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C424	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C426	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C427	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C428	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C429	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C430	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C431	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C432	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V
C433	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C434	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C435	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C436	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C437	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C438	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C439	1-162-907-11	CERAMIC CHIP	2PF	0.25PF	50V
C440	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C441	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C442	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C445	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C446	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C447	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C449	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C452	1-135-091-00	TANTALUM CHIP	1uF	20%	16V

Ref. No.	Part No.	Description			Remark
C455	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C456	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C457	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C458	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C459	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C460	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C461	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C462	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C463	1-135-215-21	TANTAL. CHIP	6.8uF	20%	16V
C464	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C465	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C466	1-164-298-11	CERAMIC CHIP	0.15uF	10%	25V
C467	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C468	1-164-298-11	CERAMIC CHIP	0.15uF	10%	25V
C469	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C470	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C471	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C472	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C474	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C476	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C477	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C478	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C481	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C482	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C483	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C485	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C487	1-128-530-11	ELECT CHIP	33uF	20%	10V
C488	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C489	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
		< FILTER >			
CF151	1-579-371-11	FILTER, CERAMIC			
		< CONNECTOR >			
CN002	1-569-775-11	PIN, CONNECTOR 5P			
CN101	1-566-538-11	CONNECTOR, FPC (NON ZIF) 6P			
CN102	1-580-789-11	PIN, CONNECTOR (SMD) 6P			
CN401	1-573-310-11	CONNECTOR, BOARD TO BOARD 20P			
CN403	1-573-338-11	CONNECTOR, BOARD TO BOARD 20P			
CN404	1-695-325-11	CONNECTOR, BOARD TO BOARD 42P			
CN406	1-573-343-21	CONNECTOR, BOARD TO BOARD 30P			
* CN407	1-580-055-11	PIN, CONNECTOR 2P			
		< DIODE >			
D001	8-719-800-76	DIODE	1SS123		
D121	8-719-027-50	DIODE	MA142WK		
D152	8-719-027-48	DIODE	MA142WA		
D159	8-719-027-50	DIODE	MA142WK		
D160	8-719-027-50	DIODE	MA142WK		

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Ref. No.	Part No.	Description	Remark
D161	8-719-404-46	DIODE MA110	
D162	8-719-027-50	DIODE MA142WK	
D163	8-719-027-50	DIODE MA142WK	
⚠D401	8-719-421-27	DIODE MA728	
D402	8-719-027-50	DIODE MA142WK	
D403	8-719-404-46	DIODE MA110	
D456	8-719-420-14	DIODE MA8082	
D462	8-719-420-14	DIODE MA8082	
		< FILTER >	
FL121	1-236-188-11	FILTER, BAND PASS	
FL152	1-236-849-21	FILTER, BAND PASS	
FL153	1-236-186-11	FILTER, BAND PASS	
FL154	1-239-055-21	FILTER, LOW PASS (CCD.PAL.Y)	
FL155	1-236-848-21	FILTER, LOW PASS	
FL401	1-406-452-11	COIL, OSC	
		< IC >	
IC001	8-752-033-38	IC CXA1202R	
IC003	8-752-053-21	IC CXA1211M	
IC121	8-759-605-61	IC CXA1203N	
IC151	8-752-065-54	IC CXA1207AR	
IC152	8-752-051-40	IC CXA1208R	
IC154	8-752-333-24	IC CXL1506M	
IC155	8-752-053-21	IC CXA1211M	
IC156	8-759-055-82	IC M62353GP	
IC158	8-759-055-82	IC M62353GP	
IC159	8-759-636-33	IC CXA1452N	
⚠IC401	8-759-056-84	IC S-8420AF	
IC402	8-752-838-20	IC CXP80624-428R	
IC403	8-759-258-83	IC uPD75316GF-463-3B9	
IC404	8-759-059-42	IC CXA1481AR	
IC405	8-759-044-78	IC BR9011BF-RE2	
IC406	8-759-081-96	IC uPD6456GS-620	
IC408	8-759-169-11	IC CXA1575M	
IC409	8-759-999-02	IC TL1596CDB	
IC410	8-759-062-02	IC MPC1720VM	
		< COIL >	
L001	1-410-381-11	INDUCTOR CHIP 10uH	
L002	1-412-066-21	INDUCTOR CHIP 220uH	
L003	1-412-066-21	INDUCTOR CHIP 220uH	
L005	1-412-060-11	INDUCTOR CHIP 22uH	
L007	1-412-058-11	INDUCTOR CHIP 10uH	
L008	1-410-658-31	INDUCTOR CHIP 220uH	
L009	1-410-380-31	INDUCTOR CHIP 8.2uH	
L010	1-410-655-31	INDUCTOR CHIP 120uH	
L011	1-412-280-31	INDUCTOR 330uH	
L012	1-410-387-11	INDUCTOR CHIP 33uH	
L013	1-410-657-21	INDUCTOR CHIP 180uH	
L015	1-410-381-11	INDUCTOR CHIP 10uH	
L121	1-410-381-11	INDUCTOR CHIP 10uH	
L150	1-410-384-31	INDUCTOR CHIP 18uH	
L152	1-410-385-11	INDUCTOR CHIP 22uH	
L154	1-410-390-11	INDUCTOR CHIP 56uH	
L155	1-410-390-11	INDUCTOR CHIP 56uH	
L160	1-412-058-11	INDUCTOR CHIP 10uH	
L161	1-410-385-11	INDUCTOR CHIP 22uH	
L162	1-412-280-31	INDUCTOR 330uH	
L163	1-410-167-41	INDUCTOR CHIP 820uH	
L164	1-410-657-21	INDUCTOR CHIP 180uH	
L169	1-410-392-11	INDUCTOR CHIP 82uH	
L170	1-410-381-11	INDUCTOR CHIP 10uH	
L171	1-410-384-31	INDUCTOR CHIP 18uH	
L175	1-410-393-11	INDUCTOR CHIP 100uH	
L176	1-410-656-11	INDUCTOR CHIP 150uH	
L177	1-412-058-11	INDUCTOR CHIP 10uH	
L178	1-412-062-11	INDUCTOR CHIP 47uH	
L179	1-410-379-31	INDUCTOR CHIP 6.8uH	
L180	1-410-393-11	INDUCTOR CHIP 100uH	
L181	1-410-393-11	INDUCTOR CHIP 100uH	
L182	1-410-655-31	INDUCTOR CHIP 120uH	
L184	1-410-386-11	INDUCTOR CHIP 27uH	
L185	1-412-058-11	INDUCTOR CHIP 10uH	
L186	1-412-052-21	INDUCTOR CHIP 1uH	
L401	1-412-056-11	INDUCTOR CHIP 4.7uH	
L402	1-412-058-11	INDUCTOR CHIP 10uH	
L403	1-412-062-11	INDUCTOR CHIP 47uH	
L404	1-412-058-11	INDUCTOR CHIP 10uH	
L405	1-412-058-11	INDUCTOR CHIP 10uH	
L406	1-412-058-11	INDUCTOR CHIP 10uH	
L407	1-414-261-11	INDUCTOR 1uH	
		< IC LINK >	
⚠PS401	1-576-122-11	LINK, IC (0.4A CCP2E10)	
⚠PS402	1-576-123-21	LINK, IC (0.8A CCP2E20)	
		< TRANSISTOR >	
Q001	8-729-216-22	TRANSISTOR 2SA1162	
Q003	8-729-230-60	TRANSISTOR 2SA1586	
Q008	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q010	8-729-403-35	TRANSISTOR UN5113	
Q019	8-729-120-28	TRANSISTOR 2SC1623	
Q020	8-729-120-28	TRANSISTOR 2SC1623	
Q021	8-729-905-23	TRANSISTOR 2SA1576-R	
Q022	8-729-230-60	TRANSISTOR 2SA1586	
Q024	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q025	8-729-014-16	TRANSISTOR RN2302	
Q026	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q121	8-729-403-35	TRANSISTOR UN5113	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description		Remark
Q123	8-729-402-42	TRANSISTOR	UN5213	
Q124	8-729-403-35	TRANSISTOR	UN5113	
Q125	8-729-117-73	TRANSISTOR	2SC4178-F14	
Q126	8-729-402-32	TRANSISTOR	2SD1819A-R	
Q151	8-729-101-07	TRANSISTOR	2SB798-DL	
Q152	8-729-402-32	TRANSISTOR	2SD1819A-R	
Q154	8-729-402-32	TRANSISTOR	2SD1819A-R	
Q158	8-729-402-32	TRANSISTOR	2SD1819A-R	
Q160	8-729-403-35	TRANSISTOR	UN5113	
Q161	8-729-402-32	TRANSISTOR	2SD1819A-R	
Q162	8-729-403-35	TRANSISTOR	UN5113	
Q166	8-729-230-60	TRANSISTOR	2SA1586	
Q168	8-729-403-35	TRANSISTOR	UN5113	
Q170	8-729-420-20	TRANSISTOR	XN4312	
Q171	8-729-117-73	TRANSISTOR	2SC4178-F14	
Q175	8-729-402-32	TRANSISTOR	2SD1819A-R	
Q176	8-729-402-32	TRANSISTOR	2SD1819A-R	
Q177	8-729-230-60	TRANSISTOR	2SA1586	
Q178	8-729-230-60	TRANSISTOR	2SA1586	
Q180	8-729-422-54	TRANSISTOR	XN4215	
Q182	8-729-402-32	TRANSISTOR	2SD1819A-R	
Q183	8-729-420-53	TRANSISTOR	UN5115	
Q184	8-729-402-32	TRANSISTOR	2SD1819A-R	
Q189	8-729-402-32	TRANSISTOR	2SD1819A-R	
Q191	8-729-402-32	TRANSISTOR	2SD1819A-R	
Q192	8-729-402-32	TRANSISTOR	2SD1819A-R	
Q194	8-729-402-32	TRANSISTOR	2SD1819A-R	
Q195	8-729-230-60	TRANSISTOR	2SA1586	
Q196	8-729-403-35	TRANSISTOR	UN5113	
Q199	8-729-807-87	TRANSISTOR	2SB1295-UL6	
Q200	8-729-013-88	TRANSISTOR	RN1302	
Q203	8-729-230-60	TRANSISTOR	2SA1586	
Q204	8-729-402-32	TRANSISTOR	2SD1819A-R	
Q205	8-729-402-42	TRANSISTOR	UN5213	
Q207	8-729-403-35	TRANSISTOR	UN5113	
Q208	8-729-013-88	TRANSISTOR	RN1302	
Q210	8-729-402-42	TRANSISTOR	UN5213	
Q212	8-729-230-60	TRANSISTOR	2SA1586	
Q214	8-729-420-12	TRANSISTOR	XN4213	
Q219	8-729-810-13	TRANSISTOR	UN5112	
Q220	8-729-402-45	TRANSISTOR	UN5212	
Q221	8-729-420-12	TRANSISTOR	XN4213	
Q222	8-729-402-32	TRANSISTOR	2SD1819A-R	
Q223	8-729-402-42	TRANSISTOR	UN5213	
Q226	8-729-403-35	TRANSISTOR	UN5113	
Q229	8-729-230-60	TRANSISTOR	2SA1586	
Q230	8-729-402-32	TRANSISTOR	2SD1819A-R	
Q231	8-729-230-60	TRANSISTOR	2SA1586	
Q232	8-729-402-32	TRANSISTOR	2SD1819A-R	
Q233	8-729-402-32	TRANSISTOR	2SD1819A-R	

Ref.No.	Part No.	Description		Remark
Q234	8-729-230-60	TRANSISTOR	2SA1586	
Q236	8-729-420-56	TRANSISTOR	UN511E	
Q237	8-729-230-60	TRANSISTOR	2SA1586	
Q401	8-729-402-48	TRANSISTOR	UN521E	
Q405	8-729-013-88	TRANSISTOR	RN1302	
Q409	8-729-017-67	TRANSISTOR	2SB1574	

< RESISTOR >

Ref.No.	Part No.	Description				Remark
R001	1-216-801-11	METAL CHIP	22	5%	1/16W	
R002	1-216-818-11	METAL CHIP	560	5%	1/16W	
R004	1-216-815-11	METAL CHIP	330	5%	1/16W	
R005	1-216-817-11	METAL CHIP	470	5%	1/16W	
R006	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R007	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R012	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R013	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R016	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R017	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R020	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R021	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R022	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R023	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R024	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R025	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R026	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R027	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R028	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R029	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R030	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R031	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R033	1-216-791-11	METAL CHIP	3.3	5%	1/16W	
R049	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R050	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R051	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R052	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R054	1-216-817-11	METAL CHIP	470	5%	1/16W	
R055	1-216-820-11	METAL CHIP	820	5%	1/16W	
R056	1-216-864-11	METAL CHIP	0	5%	1/16W	
R057	1-216-818-11	METAL CHIP	560	5%	1/16W	
R058	1-216-818-11	METAL CHIP	560	5%	1/16W	
R060	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R061	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R062	1-216-818-11	METAL CHIP	560	5%	1/16W	
R063	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R064	1-216-817-11	METAL CHIP	470	5%	1/16W	
R065	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R066	1-216-809-11	METAL CHIP	100	5%	1/16W	
R067	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R070	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R071	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	

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Ref. No.	Part No.	Description	Remark
R072	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R073	1-809-358-11	THERMISTOR, NTC 15K	
R076	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R078	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R079	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R081	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R082	1-216-804-11	METAL CHIP 39 5% 1/16W	
R083	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R085	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R086	1-216-817-11	METAL CHIP 470 5% 1/16W	
R087	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R088	1-216-808-11	METAL CHIP 82 5% 1/16W	
R090	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R097	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R113	1-809-350-21	THERMISTOR, NTC 470	
R122	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R123	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R124	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R125	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R126	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R127	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R129	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R130	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R131	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R132	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R133	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R134	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R135	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R136	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R137	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R138	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R139	1-216-817-11	METAL CHIP 470 5% 1/16W	
R140	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R141	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R142	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R143	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R144	1-216-817-11	METAL CHIP 470 5% 1/16W	
R145	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R146	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R150	1-216-864-11	METAL CHIP 0 5% 1/16W	
R151	1-216-296-00	METAL CHIP 0 5% 1/8W	
R152	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R153	1-216-304-11	METAL CHIP 3.3 5% 1/10W	
R154	1-216-820-11	METAL CHIP 820 5% 1/16W	
R155	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R156	1-216-296-00	METAL CHIP 0 5% 1/8W	
R158	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R160	1-216-819-11	METAL CHIP 680 5% 1/16W	
R161	1-216-809-11	METAL CHIP 100 5% 1/16W	
R164	1-216-811-11	METAL CHIP 150 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R167	1-216-820-11	METAL CHIP 820 5% 1/16W	
R168	1-216-820-11	METAL CHIP 820 5% 1/16W	
R170	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R175	1-216-810-11	METAL CHIP 120 5% 1/16W	
R177	1-216-819-11	METAL CHIP 680 5% 1/16W	
R178	1-216-817-11	METAL CHIP 470 5% 1/16W	
R179	1-216-820-11	METAL CHIP 820 5% 1/16W	
R189	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R190	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R191	1-216-864-11	METAL CHIP 0 5% 1/16W	
R192	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R193	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R194	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R196	1-216-815-11	METAL CHIP 330 5% 1/16W	
R198	1-216-817-11	METAL CHIP 470 5% 1/16W	
R200	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R201	1-216-815-11	METAL CHIP 330 5% 1/16W	
R202	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R203	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R204	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R205	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R206	1-216-813-11	METAL CHIP 220 5% 1/16W	
R208	1-216-864-11	METAL CHIP 0 5% 1/16W	
R211	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R213	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R216	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R217	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R218	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R219	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R220	1-216-811-11	METAL CHIP 150 5% 1/16W	
R221	1-216-864-11	METAL CHIP 0 5% 1/16W	
R222	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R223	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R224	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R226	1-216-819-11	METAL CHIP 680 5% 1/16W	
R228	1-216-813-11	METAL CHIP 220 5% 1/16W	
R231	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R232	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R234	1-216-864-11	METAL CHIP 0 5% 1/16W	
R238	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R242	1-216-818-11	METAL CHIP 560 5% 1/16W	
R243	1-216-809-11	METAL CHIP 100 5% 1/16W	
R244	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R245	1-216-817-11	METAL CHIP 470 5% 1/16W	
R246	1-216-817-11	METAL CHIP 470 5% 1/16W	
R247	1-216-296-00	METAL CHIP 0 5% 1/8W	
R248	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R250	1-216-810-11	METAL CHIP 120 5% 1/16W	
R251	1-216-806-11	METAL GLAZE 56 5% 1/16W	
R253	1-216-821-11	METAL CHIP 1K 5% 1/16W	

Ref.No.	Part No.	Description				Remark
R254	1-216-818-11	METAL CHIP	560	5%	1/16W	
R255	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R256	1-216-864-11	METAL CHIP	0	5%	1/16W	
R257	1-216-818-11	METAL CHIP	560	5%	1/16W	
R258	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R259	1-216-816-11	METAL CHIP	390	5%	1/16W	
R260	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R263	1-216-864-11	METAL CHIP	0	5%	1/16W	
R266	1-216-864-11	METAL CHIP	0	5%	1/16W	
R267	1-216-864-11	METAL CHIP	0	5%	1/16W	
R270	1-216-864-11	METAL CHIP	0	5%	1/16W	
R271	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R272	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R276	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R277	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R278	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R279	1-216-818-11	METAL CHIP	560	5%	1/16W	
R280	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R281	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R282	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R283	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R285	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R286	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R290	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R291	1-216-820-11	METAL CHIP	820	5%	1/16W	
R293	1-216-807-11	METAL CHIP	68	5%	1/16W	
R294	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R295	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R297	1-216-820-11	METAL CHIP	820	5%	1/16W	
R298	1-216-820-11	METAL CHIP	820	5%	1/16W	
R299	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R300	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R301	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R302	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R303	1-216-846-11	METAL CHIP	120K	5%	1/16W	
R304	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R305	1-216-818-11	METAL CHIP	560	5%	1/16W	
R306	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R307	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R308	1-216-819-11	METAL CHIP	680	5%	1/16W	
R309	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R310	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R311	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R312	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R314	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R315	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R316	1-216-817-11	METAL CHIP	470	5%	1/16W	
R318	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R321	1-216-864-11	METAL CHIP	0	5%	1/16W	
R323	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R324	1-216-817-11	METAL CHIP	470	5%	1/16W	
R325	1-216-816-11	METAL CHIP	390	5%	1/16W	
R329	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R331	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R333	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R334	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R335	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R337	1-216-864-11	METAL CHIP	0	5%	1/16W	
R339	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R341	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R342	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R343	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R344	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R345	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R346	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R347	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R349	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R350	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R352	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R353	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R354	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R355	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R356	1-216-817-11	METAL CHIP	470	5%	1/16W	
R357	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R358	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R359	1-216-296-00	METAL CHIP	0	5%	1/8W	
R360	1-216-296-00	METAL CHIP	0	5%	1/8W	
R361	1-216-864-11	METAL CHIP	0	5%	1/16W	
R362	1-216-810-11	METAL CHIP	120	5%	1/16W	
R366	1-216-844-11	METAL CHIP	82K	5%	1/16W	
R371	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R373	1-216-817-11	METAL CHIP	470	5%	1/16W	
R374	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R375	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R376	1-216-817-11	METAL CHIP	470	5%	1/16W	
R377	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R378	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R379	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R380	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R381	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R382	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R383	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R384	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R385	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R386	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R387	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R388	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R389	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R390	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R391	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	

Ref. No.	Part No.	Description	Remark
R392	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R393	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R394	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R397	1-216-820-11	METAL CHIP 820 5% 1/16W	
R398	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R401	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R403	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R404	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R405	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R406	1-216-809-11	METAL CHIP 100 5% 1/16W	
R407	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R408	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R409	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R410	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R411	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R412	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R413	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R414	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R415	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R416	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R417	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R418	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R419	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R420	1-216-856-11	METAL CHIP 820K 5% 1/16W	
R421	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R422	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R423	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R424	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R425	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R426	1-216-856-11	METAL CHIP 820K 5% 1/16W	
R427	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R428	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R429	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R430	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R431	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R432	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R433	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R435	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R436	1-216-864-11	METAL CHIP 0 5% 1/16W	
R437	1-216-817-11	METAL CHIP 470 5% 1/16W	
R438	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R439	1-216-864-11	METAL CHIP 0 5% 1/16W	
R441	1-216-864-11	METAL CHIP 0 5% 1/16W	
R442	1-216-864-11	METAL CHIP 0 5% 1/16W	
R443	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R445	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R449	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R450	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R451	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R452	1-216-833-11	METAL CHIP 10K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R454	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R456	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R457	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R460	1-216-864-11	METAL CHIP 0 5% 1/16W	
R461	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R462	1-216-809-11	METAL CHIP 100 5% 1/16W	
R463	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R468	1-216-019-00	METAL CHIP 56 5% 1/10W	
R472	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R474	1-217-671-11	METAL CHIP 1 5% 1/10W	
R475	1-217-671-11	METAL CHIP 1 5% 1/10W	
R476	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R479	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R480	1-217-671-11	METAL CHIP 1 5% 1/10W	
R481	1-217-671-11	METAL CHIP 1 5% 1/10W	
R484	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R485	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R487	1-216-864-11	METAL CHIP 0 5% 1/16W	
R488	1-216-809-11	METAL CHIP 100 5% 1/16W	
R489	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R490	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R493	1-216-864-11	METAL CHIP 0 5% 1/16W	
R495	1-216-864-11	METAL CHIP 0 5% 1/16W	
R497	1-216-852-11	METAL CHIP 390K 5% 1/16W	
R498	1-216-864-11	METAL CHIP 0 5% 1/16W	

< NETWORK >

Ref. No.	Part No.	Description	Remark
RB401	1-236-442-11	NETWORK, RES 330K	
RB402	1-236-907-11	NETWORK, RES 100K	
RB403	1-236-907-11	NETWORK, RES 100K	
RB404	1-236-908-11	NETWORK, RES 10K	
RB405	1-236-436-11	NETWORK, RES 100K	
RB406	1-236-908-11	NETWORK, RES 10K	
RB407	1-236-907-11	NETWORK, RES 100K	
RB408	1-236-908-11	NETWORK, RES 10K	
RB409	1-236-904-11	NETWORK, RES 1K	
RB410	1-236-412-11	NETWORK, RES 1.0K	
RB411	1-236-424-11	NETWORK, RES 10K	
RB414	1-236-904-11	NETWORK, RES 1K	
RB416	1-236-412-11	NETWORK, RES 1.0K	
RB418	1-236-408-11	NETWORK, RES 470	
RB421	1-236-908-11	NETWORK, RES 10K	
RB422	1-236-424-11	NETWORK, RES 10K	
RB423	1-236-424-11	NETWORK, RES 10K	
RB424	1-236-424-11	NETWORK, RES 10K	
RB425	1-236-424-11	NETWORK, RES 10K	
RB426	1-236-412-11	NETWORK, RES 1.0K	

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remark
RV151	1-238-087-11	RES, ADJ, CERMET 1K	

< FLEXIBLE BOARD >

Ref. No.	Part No.	Description	Remark
W001	1-696-489-11	FP-588 FLEXIBLE BOARD	
W405	1-644-285-11	FP-572 FLEXIBLE BOARD	

< VIBRATOR >

Ref. No.	Part No.	Description	Remark
X151	1-579-366-11	VIBRATOR, CRYSTAL 4.43MHz	
X401	1-579-063-21	VIBRATOR, CERAMIC 4.19MHz	
X402	1-579-049-21	VIBRATOR, CRYSTAL 32.768kHz	
X403	1-579-368-31	VIBRATOR, CRYSTAL 11.719MHz	

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MISCELLANEOUS

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Ref. No.	Part No.	Description	Remark
18	1-696-487-11	CABLE, FLAT (FFC-90)	
85	1-692-257-11	SWITCH, PUSH (ZOOM)	
105	1-547-548-11	LENS, ZOOM (VCL-6210WC)(TYPE A)	
105	1-547-630-11	LENS, ZOOM (VCL-6210WF)(TYPE B)	
108	1-547-558-21	FILTER BLOCK, OPTICAL	
123	1-751-814-11	CABLE, FLAT (FFC-124)	
257	1-568-323-11	CONNECTOR, BOARD TO BOARD 4P	
321	1-641-643-12	FP-444 FLEXIBLE BOARD	
322	1-691-254-13	CONNECTOR, TRANSLATION 10P	
H516	1-550-104-32	HOLDER, BATTERY	
IC875	A-7030-369-A	CCD BLOCK ASSY (ICX055AK-1)(CCD IMAGER)	
J901	1-537-281-41	TERMINAL BOARD	
⚠PS901	1-532-841-21	LINK, IC (1.6A PRF1600)	
⚠PS902	1-532-841-21	LINK, IC (1.6A PRF1600)	
M901	A-7048-585-A	DRUM ASSY (DGH-90A-R)	
M902	8-835-477-01	MOTOR, DC SCE-0101A (CAPSTAN)	
M903	A-7040-304-A	MOTOR BLOCK ASSY, LM (LOADING)	
M904	3-708-494-11	METER ASSY, IG (IRIS)(TYPE A)	
M904	3-708-653-01	IRIS UNIT (TYPE B)	
M905	3-708-491-01	MOTOR ASSY, STEPPING (FOCUS)(TYPE A)	
M905	3-708-656-01	MOTOR UNIT, FOCUS (TYPE B)	
M906	3-708-492-01	MOTOR ASSY, PZ (ZOOM)(TYPE A)	
M906	3-708-654-01	MOTOR UNIT, ZOOM (TYPE B)	
S001	1-572-986-11	SWITCH, ROTARY (ENCODER)	
S002	1-572-987-11	SWITCH, PUSH (3 KEY) (REC PROOF, ME/MP, MP/MP-HG)	
S005	1-570-771-21	SWITCH (C DOWN)	
⚠V901	1-452-565-11	CRT ASSY (M01KKD70WB)	
W001	1-696-489-11	FP-588 FLEXIBLE BOARD	
W405	1-644-285-11	FP-572 FLEXIBLE BOARD	
⚠W501	1-540-019-21	SOCKET ASSY, CRT	
W519	1-696-488-11	CABLE, FLAT (FFC-92)	
W521	1-642-186-11	FP-437 FLEXIBLE BOARD	
W522	1-696-490-11	FP-589 FLEXIBLE BOARD	
W971	1-696-484-11	CABLE, FLAT (FFC-87)	
W986	1-696-621-11	FP-590 FLEXIBLE BOARD	
W987	1-696-622-11	FP-591 FLEXIBLE BOARD	
W991	1-696-483-11	CABLE, FLAT (FFC-86)	

****

ACCESSORIES & PACKING MATERIALS

****

Ref. No.	Part No.	Description	Remark
	1-574-039-11	CORD, CONNECTION (A/V connecting cable (monaural), 1.5m)(EXCEPT E)	
	1-764-622-11	ADAPTOR, CONVERSION (AEP, UK, Russian)	
	3-712-673-01	SCREWDRIVER (E)	
	3-758-358-51	MANUAL, INSTRUCTION (ENGLISH, SPANISH) (E, AUS, Tourist)	
	3-758-358-61	MANUAL, INSTRUCTION (FRENCH, GERMAN) (E, Tourist)	
	3-758-358-71	MANUAL, INSTRUCTION (ARABIC) (E)	
	3-758-358-81	MANUAL, INSTRUCTION (CHINESE) (E, Tourist)	
	3-758-359-11	MANUAL, INSTRUCTION (ENGLISH, SPANISH) (AEP, UK)	
	3-758-359-41	MANUAL, INSTRUCTION (GERMAN, ITALIAN) (AEP, Russian)	
	3-758-359-51	MANUAL, INSTRUCTION (FRENCH, DUTCH) (AEP)	
	3-758-359-61	MANUAL, INSTRUCTION (SWEDISH, PORTUGUESE) (AEP)	
	3-758-359-71	MANUAL, INSTRUCTION (DANISH, FINNISH) (AEP)	
	3-758-359-81	MANUAL, INSTRUCTION (ENGLISH, RUSSIAN) (Russian)	
*	3-949-004-01	CUSHION, ACC (EXCEPT Russian)	
*	3-949-005-01	CUSHION (LOWER)	
*	3-952-711-01	CUSHION, ACC (Russian)	
*	3-958-245-01	INDIVIDUAL CARTON (AEP, UK, Russian)	
*	3-958-245-11	INDIVIDUAL CARTON (E, AUS, Tourist)	
**	AC-V25/V25A	AC POWER ADAPTOR	
***	NP-55	BATTERY PACK	

Note

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.

*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

****

****

HARDWARE LIST

****

Ref. No.	Part No.	Description	Remark
#1	7-627-853-57	PRECISION SCREW +P 2X5	

Be sure to read “Precautions for Replacement of CCD Imager” on page 78 when changing the CCD imager.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

SECTION 7
CAMERA SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 196.

7-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

7-1-1. List of Service Tools

- Oscilloscope
- Adjusting driver
- Stabilized power supply
- Color monitor
- Vectorscope
- Digital voltmeter

Ref. No.	Name	Part Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	Max gain adjustment (2 used) White balance check
	ND filter 0.4	J-6080-806-A	Max gain adjustment
	ND filter 0.3	J-6080-818-A	White balance adjustment
	ND filter 0.1	J-6080-807-A	Max gain adjustment
J-3	Pattern box PTB-500	J-6029-140-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote control unit (RM-95-remodeled in part)[Note 1]	J-6082-053-B	
J-6	Extension cord (10P, 1 mm)	J-6082-064-A	For extension of JK-99 board
J-7	Extension cord (20P, 0.8 mm)	J-6082-196-A	For extension of CN-84 board (Cabinet (R)) (For the video and the camera section adjustment)
			For extension of AU-171 board (During the repair of AU-171 board)
J-8	Extension cord (16P, 0.8 mm)	J-6082-136-A	For the extension of the lens block (During the repair of the camera section)
J-9	Relay board (21P, 0.5 mm)[Note 2]	J-6082-176-A	For the extension of the lens block (During the repair of the camera section)
J-10	Measuring pin for camera section	J-6082-139-A	For the camera section adjustment
J-11	Extension cord (42P, 0.8 mm)	J-6082-195-A	For the extension of DD-67 board (During the repair of the video section)
J-12	Siemens star	J-6080-875-A	For flange back check
J-13	Extension cord (20P, 0.5 mm)[Note 2]	J-6082-138-A	For extension between the lens block (FPC) and VC-147 board (CN851) (During the repair of the camera section)
J-14	Extension board (30P, 0.8 mm)	J-6082-167-A	For the extension of VS-116 board (For the mecha deck check)

Note 1: If the micro processor IC in the adjusting remote control unit is not the new micro processor (UPD7503G-C56-12), the switchover of the page cannot be carried out. In this case, replace with the new micro processor (8-759-148-35).

Note 2: The extension code (J-6082-138-A) is also attached with a 21P, 0.5 mm code. Connect this code to the relay board (J-6082-176-A) for extensions between the lens block (FPC) and VC-147 board (CN851).

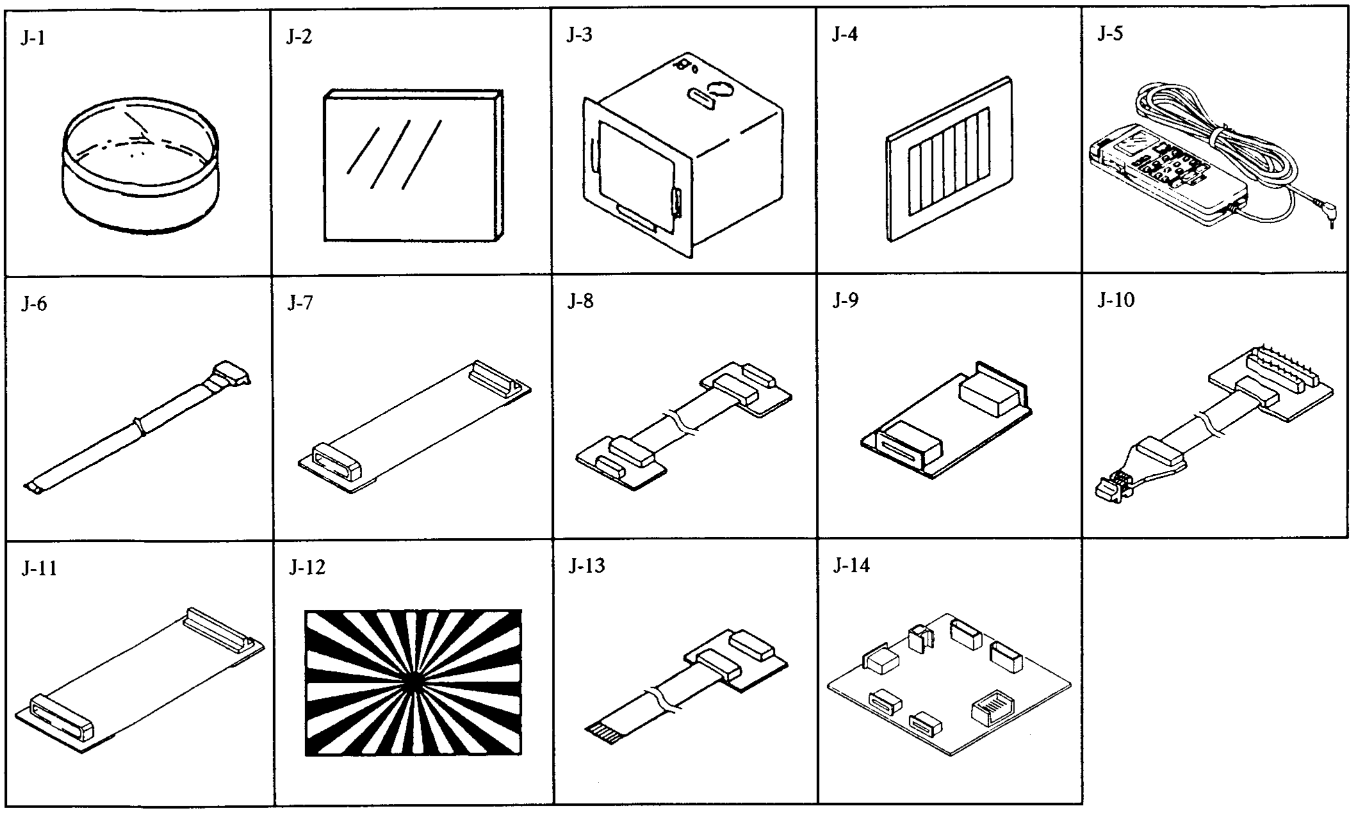

J-1
J-2
J-3
J-4
J-5
J-6
J-7
J-8
J-9
J-10
J-11
J-12
J-13
J-14

Fig. 7-1.

7-1-2. Preparations

Note: For further details on how to remove the cabinet and each board, refer to "2. Disassembly".

1) Connect the equipments for adjustment as shown in Fig. 7-3.
2) The EVF (Electronic viewfinder) is required for checking the white balance mode and shutter speeds. If the EVF is not required, remove the VS-116 board CN102.

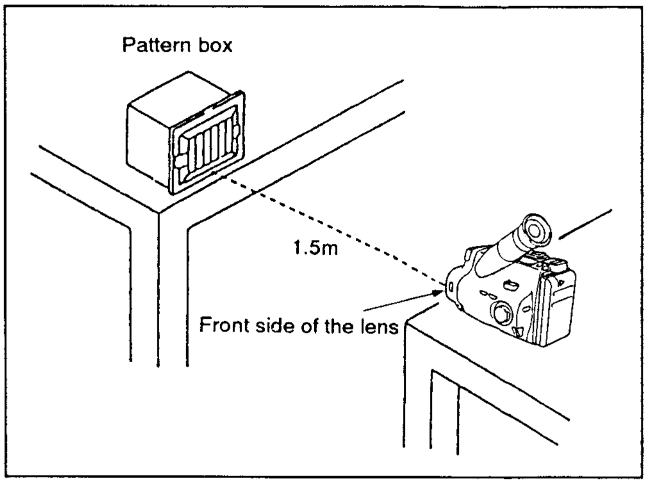
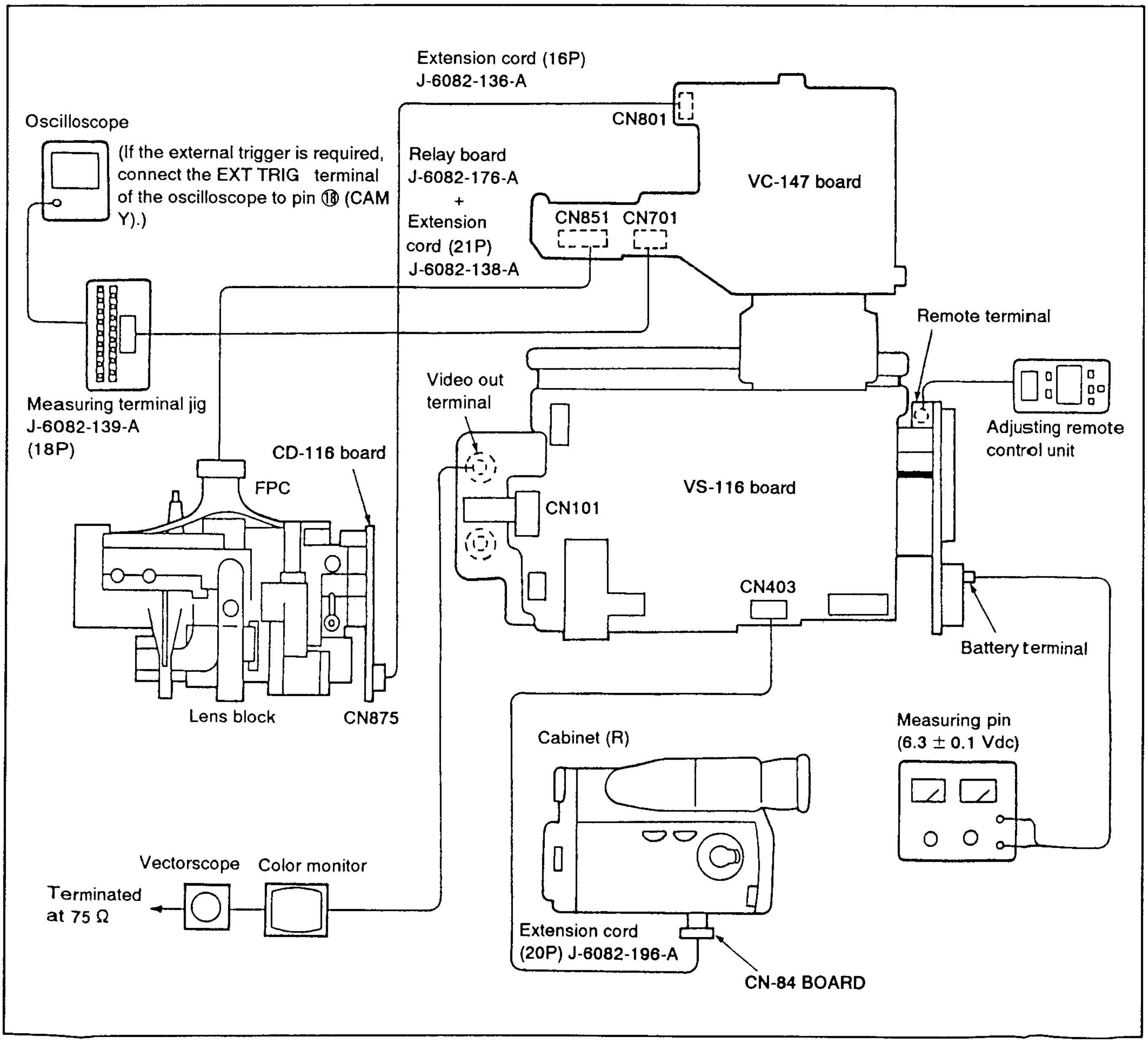

Pattern box
1.5m
Front side of the lens

Fig. 7-2.


Extension cord (16P)
J-6082-136-A
Oscilloscope
CN801
Relay board
J-6082-176-A
+
Extension
cord (21P)
J-6082-138-A
VC-147 board
CN851
CN701
Remote terminal
Measuring terminal jig
J-6082-139-A
(18P)
Video out
terminal
Adjusting remote
control unit
CD-116 board
FPC
VS-116 board
CN101
CN403
Battery terminal
Lens block
CN875
Measuring pin
(6.3 ± 0.1 Vdc)
Cabinet (R)
Vectorscope
Color monitor
Terminated
at 75 Ω
Extension cord
(20P) J-6082-196-A
CN-84 BOARD

(If the external trigger is required, connect the EXT TRIG terminal of the oscilloscope to pin ⑱ (CAM Y).)

Fig. 7-3.

7-1-3. Precautions

1. Switch settings

Adjust the switches to the following positions, and perform the adjustments without inserting the tape, unless specified otherwise.

1. Camera/player power switch (CF-34 board S997) ····Camera
2. Standby switch (SW-223 board S519)·················· Standby
3. LENS OPEN switch (MF-214 board S973) ············· OPEN

2. Adjustment Procedure

Perform in the given order as a rule.

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the display frame as shown in Fig. 7-4. if adjustments are performed using the color bar chart.
   (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and so that the white pattern will be displayed.
   (In this case don't touch zoom SW)

Color bar chart standard picture frame

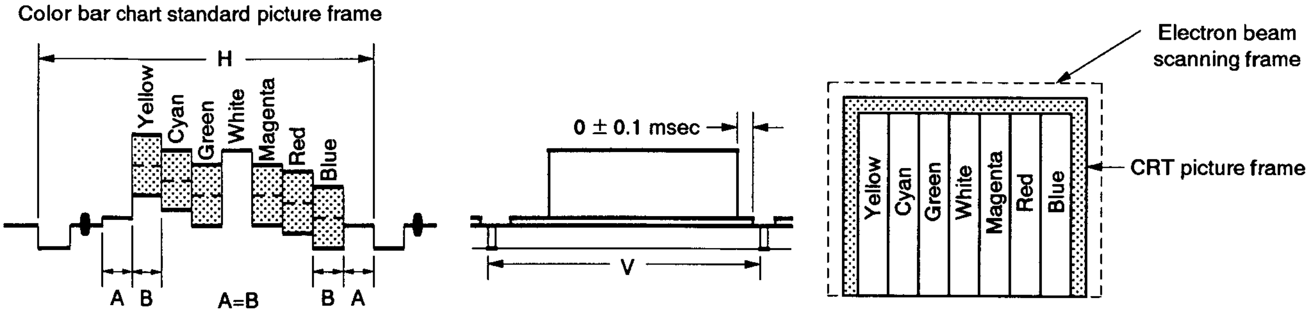

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A
0 ± 0.1 msec
V
Electron beam scanning frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. a (Video input/output terminal output waveform)

Fig. b (Picture on monitor TV)

Adjust the zooming and direction of the camera to obtain the output waveform shown in Fig. a and the monitor TV picture shown in Fig. b.

Fig. 7-4.

3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm× 841 mm) paper to a black one, and make the chart shown in Fig. 7-5.

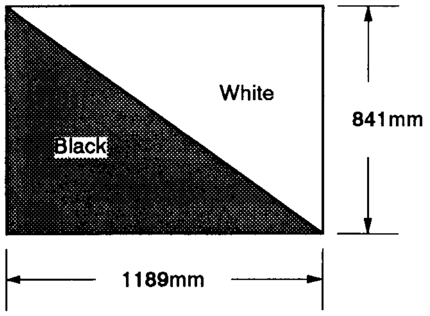

White
Black
841mm
1189mm

Fig. 7-5.

Note: Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

7-1-4. Adjusting Remote Control Unit

The camera section is adjusted by changing the constant using the coefficient of the digital signal processing calculation, or modifying the output voltage of EVR IC (VC-147 board IC702). These processes are carried out by the camera micro processor (VC-147 board IC709). This micro processor reads the data written in the non-volatile memory (VC-147 board IC712), and transmits it to the digital signal processing circuit and EVR.
The adjusting remote control unit is used for rewriting the adjustment data written in the non-volatile memory necessary for performing the adjustments.
The adjusting remote control unit uses the remote control signal line (LANC) to correspond mutually with the camera micro processor. The page, address and the up/down command of the data can be transmitted from the remote control unit to the camera micro processor. On the other hand, the page, address, and data can also be transmitted the other way round.

1. Using the adjusting remote control unit

1) Connect the adjusting remote control unit to the remote terminal (DD-67 board J902).
2) Adjust the HOLD switch of the adjusting remote control unit to HOLD (SERVICE position).
   If it has been properly connected, the LCD on the adjusting remote control unit will show the display in Fig. 7-6.

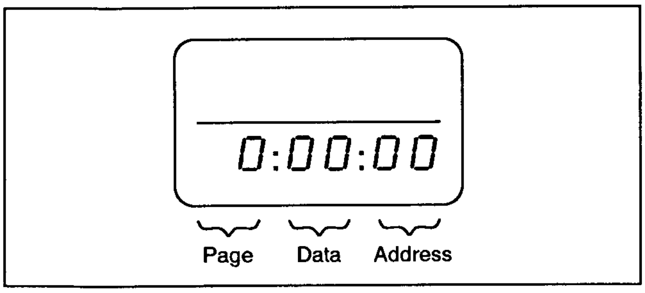


Fig. 7-6.

3) Operate the adjusting remote control unit as follows.
   - Changing the page
     The page will increase when the EDIT SEARCH+ button is pressed. It will decrease when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Display on LCD	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 7-1.

   - Changing the address
     The address will increase when the FF (►►) button is pressed, and decrease when the REW (◄◄) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data will increase when the PLAY (▶) button is pressed, and decrease when the STOP (■) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     It is necessary to press the PAUSE button to write the adjustment data (F page, D page) in the non-volatile memory.
     (The new adjustment data will not be recorded in the non-volatile memory if this operation is not performed.)
4) Select page: 6, address: 00, and adjust the data to 01. This releases the write protect of page F, and the camera section (F page) can be adjusted.
5) After completing all adjustments, turn off the main power (6.3V) once. This can release the adjustment mode (other than page F).

2. Precautions upon using the adjusting remote control unit

The correct adjustment data may be erased at times, due to operation errors of the adjusting remote control unit. To prevent this from occurring, it is recommended that all adjustment data be recorded in the memory before beginning adjustments, and the new adjustment data be recorded in the memory after each adjustment.

7-1-5. Page F Address List

Note 1: The data listed in the adjustment data memo column are fixed values.

Note 2: The adjustment data initial values are the values after performing "Page F Data Initialization" and "Page F Data Modification". They are different from the value after performing all the adjustments.

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2">Function
[ ] Indicate the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>00</td><td>ID</td><td>Set ID</td><td>3E</td><td>3E</td></tr>
<tr><td>01</td><td>FADER LEVEL</td><td>AE REF level modification during fader</td><td>E0</td><td>E0</td></tr>
<tr><td>02</td><td>FADER ENDTIM</td><td>The setting of the AE REF modulation time during fader</td><td>10</td><td>10</td></tr>
<tr><td>03</td><td>CS SL</td><td>Carrier balance adjustment</td><td>35</td><td></td></tr>
<tr><td>04</td><td>VSUB</td><td>CCD imager V SUB adjustment [IC702 ③]</td><td>80</td><td></td></tr>
<tr><td>05</td><td>VPGH</td><td>CCD imager VRG adjustment [IC702 ④]</td><td>80</td><td></td></tr>
<tr><td>06</td><td>VREF Y</td><td>Camera core Y D/A standard voltage, SYNC level adjustment [IC702 ⑤]</td><td>7B</td><td></td></tr>
<tr><td>07</td><td>VREF C</td><td>Camera core CHROMA D/A standard voltage, BURST level adjustment [IC702 ⑥]</td><td>99</td><td></td></tr>
<tr><td>08</td><td>HALL GAIN</td><td>Hole amplifier gain adjustment [IC702 ⑦] } HALL adjustment</td><td>47</td><td></td></tr>
<tr><td>09</td><td>HALL OFFSET</td><td>Hole amplifier offset adjustment [IC702 ⑧]</td><td>71</td><td></td></tr>
<tr><td>0A</td><td>LOWLIGHT CS</td><td>Low luminance intensity REF level modulation start setting</td><td>C0</td><td>C0</td></tr>
<tr><td>0B</td><td>REF 2V</td><td>2V standard voltage for hole element [IC702 ⑫]</td><td>68</td><td>68</td></tr>
<tr><td>0C</td><td>AD REF</td><td>Black level setting during A/D conversion, A/D off set adjustment [IC702 ⑬]</td><td>72</td><td></td></tr>
<tr><td>0D</td><td>CORE DETH</td><td>CCD correction control</td><td>04</td><td>04</td></tr>
<tr><td>0E</td><td>CORE VTR DELAY</td><td>1HDL longitudinal setting during VTR playback</td><td>16</td><td>16</td></tr>
<tr><td>0F</td><td>CORE APCN4</td><td>Horizontal aperture setting</td><td>35</td><td>35</td></tr>
<tr><td>10</td><td>CORE APCN5</td><td>Vertical aperture setting</td><td>3D</td><td>3D</td></tr>
<tr><td>11</td><td>CORE EFECT</td><td>Special effect control</td><td>A0</td><td>A0</td></tr>
<tr><td>12</td><td>CORE MATR</td><td>BLUE matrix constant</td><td>24</td><td>24</td></tr>
<tr><td>13</td><td>CORE MATB</td><td>RED matrix constant</td><td>6C</td><td>6C</td></tr>
<tr><td>14</td><td>CORE BURST LEVEL</td><td>Burst flag level setting, color modulation ON/OFF
<table>
<tr><th>Data</th><th>Adjustment modeAdjustment</th></tr>
<tr><td>2E</td><td>Color modulation stopped</td></tr>
<tr><td>38</td><td>Normal level</td></tr>
</table></td><td>38</td><td>38</td></tr>
<tr><td>15</td><td>CORE CHROMA DLY</td><td>Y/C delay adjustment</td><td>02</td><td>02</td></tr>
<tr><td>16</td><td>CORE Y SETUP</td><td>Set up level setting</td><td>06</td><td>06</td></tr>
<tr><td>17</td><td>CORE VHAPCN</td><td>Slice and level setting of the aperture signal</td><td>17</td><td>17</td></tr>
<tr><td>18</td><td>CORE B-Y GAIN</td><td>B–Y GAIN } Color reproduction adjustments</td><td>13</td><td></td></tr>
<tr><td>19</td><td>CORE R-Y GAIN</td><td>R–Y GAIN</td><td>11</td><td></td></tr>
<tr><td>1A</td><td>CORE R-Y HUE</td><td>R–Y HUE</td><td>FF</td><td></td></tr>
<tr><td>1B</td><td>CORE B-Y HUE</td><td>B–Y HUE</td><td>FD</td><td></td></tr>
<tr><td>1C</td><td>CS/APCCUT</td><td>Low luminance intensity aperture and chroma suppress level</td><td>22</td><td>22</td></tr>
</table>

Table 7-2 (1).

Address	Name	Function [ ] Indicate the adjustment voltage output terminal		Adjustment data	
				Initial value	Memo column
1D	NEXT LINE DEFECT BIT	CCD correction pattern	CCD imager correction data write	00	
1E	CCD DEFECT0	CCD correction data		00	
1F	CCD DEFECT1	CCD correction data		00	
20	CCD DEFECT2	CCD correction data		00	
21	CCD DEFECT3	CCD correction data		00	
22	CCD DEFECT4	CCD correction data		00	
23	CCD DEFECT5	CCD correction data		00	
24	CCD DEFECT6	CCD correction data		00	
25	CCD DEFECT7	CCD correction data		00	
26	CCD DEFECT8	CCD correction data		00	
27	CCD DEFECT9	CCD correction data		00	
28	CCD DEFECT10	CCD correction data		00	
29	CCD DEFECT11	CCD correction data		00	
2A	CCD DEFECT12	CCD correction data		00	
2B	CCD DEFECT13	CCD correction data		00	
2C	CCD DEFECT14	CCD correction data		00	
2D	RREF L	3200k Red standard data LSB	Auto white balance preset adjustment	72	
2E	RREF H	3200k Red standard data MSB		5F	
2F	GREF L	3200k Green standard data LSB		D4	
30	GREF H	3200k Green standard data MSB		63	
31	BREF L	3200k Blue standard data LSB		3B	
32	BREF H	3200k Blue standard data MSB		2C	
33	RCONTREF	3200k RCONT adjustment value	Pre-white balance adjustment	42	
34	BCONTREF	3200k BCONT adjustment value		4A	
35	AWB NOWM R	Red regular correction coefficient	Auto white balance adjustment	7E	
36	AWB NORM B	Blue regular correction coefficient		96	
37	AWB SHUT IN	Indoor determination shutter data		A8	A8
38	ABW SHUT OUT	Outdoor determination shutter data		A0	A0
39	AWB IRIS IN	Indoor determination hole data	IRIS IN/OUT adjustment	79	
3A	AWB IRIS OUT	Outdoor determination hole data		7F	
3B	AWB G LEVEL	High luminance section green integral level		02	02
3C	AWB G WIDTH	High luminance section green integral level range		03	03
3D	DMAT HUE	Variable linear matrix HUE coefficient	Linear matrix adjustment	00	
3E	DMAT GAIN	Variable linear matrix GAIN coefficient		00	
3F	AWB SELECT	AWB mode selection		00	00
40	AWB DIFF	Standard difference from the outdoor fixed value		0A	0A
41	AWB BOTTOM SLP R	AWB incoming frame bottom R coefficient		48	48
42	AWB BOTTOM SLP B	AWB incoming frame bottom B coefficient		78	78
43	AWB MIDDLE SLP R	AWB incoming frame middle R coefficient		60	60
44	AWB MIDDLE SLP B	AWB incoming frame middle B coefficient		40	40
45	AWB TOP SLP R	AWB incoming frame top R coefficient		66	66
46	AWB TOP SLP B	AWB incoming frame top B coefficient		18	18

Table 7-2 (2).

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2">Function
[ ] Indicate the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>47</td><td>AWB KEIKO R</td><td>AWB incoming frame fluorescent light R coefficient</td><td>66</td><td>66</td></tr>
<tr><td>48</td><td>AWB KEIKO B</td><td>AWB incoming frame fluorescent light B coefficient</td><td>18</td><td>18</td></tr>
<tr><td>49</td><td>AWB BOTTOM UP</td><td>AWB incoming frame bottom upper value</td><td>C2</td><td>C2</td></tr>
<tr><td>4A</td><td>AWB BOTTOM DWN</td><td>AWB incoming frame bottom lower value</td><td>8C</td><td>8C</td></tr>
<tr><td>4B</td><td>AWB MIDDLE UP</td><td>AWB incoming frame middle upper value</td><td>AD</td><td>AD</td></tr>
<tr><td>4C</td><td>AWB MIDDLE DWN</td><td>AWB incoming frame middle lower value</td><td>96</td><td>96</td></tr>
<tr><td>4D</td><td>AWB TOP UP</td><td>AWB incoming frame top upper value</td><td>78</td><td>78</td></tr>
<tr><td>4E</td><td>AWB TOP DWN</td><td>AWB incoming frame top lower value</td><td>60</td><td>60</td></tr>
<tr><td>4F</td><td>AWB KEIKO</td><td>AWB incoming frame fluorescent light output lower value</td><td>66</td><td>66</td></tr>
<tr><td>50</td><td>AWB KEIKO DWN</td><td>AWB incoming frame fluorescent light lower value</td><td>59</td><td>59</td></tr>
<tr><td>51</td><td>AWB R TOP LMT</td><td>AWB incoming frame Rcont upper value</td><td>6E</td><td>6E</td></tr>
<tr><td>52</td><td>AWB R DWN LMT</td><td>AWB incoming frame Rcont lower value</td><td>20</td><td>20</td></tr>
<tr><td>53</td><td>AWB B TOP LMT</td><td>AWB incoming frame Bcont upper value</td><td>83</td><td>83</td></tr>
<tr><td>54</td><td>AWB B IN TOP</td><td>AWB incoming frame Bcont</td><td>67</td><td>67</td></tr>
<tr><td>55</td><td>AWB B IN MAX</td><td>AWB incoming frame Bcont</td><td>5C</td><td>5C</td></tr>
<tr><td>56</td><td>AWB B OUT MIN</td><td>AWB incoming frame Bcont</td><td>5C</td><td>5C</td></tr>
<tr><td>57</td><td>AWB B OUT DWN</td><td>AWB incoming frame Bcont</td><td>4A</td><td>4A</td></tr>
<tr><td>58</td><td>AWB B DWN LMT</td><td>AWB incoming frame Bcont lower value</td><td>1B</td><td>1B</td></tr>
<tr><td>59</td><td>AWB LL LMT</td><td>Low luminance intensity limiter</td><td>06</td><td>06</td></tr>
<tr><td>5A</td><td>AWB T M DIVID</td><td>AWB incoming frame upper, middle border value</td><td>5E</td><td>5E</td></tr>
<tr><td>5B</td><td>AWB B M DIVID</td><td>AWB incoming frame middle, lower border value</td><td>39</td><td>39</td></tr>
<tr><td>5C</td><td>AWB DELAY TM</td><td>AWB tracking speed<table><tr><th>Data</th><th>Adjustment mode</th></tr><tr><td>01</td><td>High speed tracking mode</td></tr><tr><td>0C</td><td>Normal</td></tr></table></td><td>0C</td><td>0C</td></tr>
<tr><td>5D</td><td>AWB FAST TM</td><td>AWB initial high speed tracking amount</td><td>40</td><td>40</td></tr>
<tr><td>5E</td><td>AWB OUT HYS OFF</td><td>AWB outdoor hysteresis off difference</td><td>0C</td><td>0C</td></tr>
<tr><td>5F</td><td>AWB OUT B HYS</td><td>AWB outdoor hysteresis amount</td><td>06</td><td>06</td></tr>
<tr><td>60</td><td>AWB MODE</td><td>AWB adjustment mode<table><tr><th>Data</th><th>Adjustment mode</th></tr><tr><td>00</td><td>Normal</td></tr><tr><td>D0</td><td>AWB adjustment mode</td></tr><tr><td>F1</td><td>All area tracking mode</td></tr></table></td><td>00</td><td>00</td></tr>
<tr><td>61</td><td>AE REFL</td><td>Reference value (lower) for AE</td><td>00</td><td>00</td></tr>
<tr><td>62</td><td>AE REFH</td><td>Reference value (upper) for AE</td><td>1E</td><td>1E</td></tr>
<tr><td>63</td><td>AGC MIN</td><td>AGC MIN value (AGCREF value), IRIS level adjustment</td><td>E3</td><td></td></tr>
<tr><td>64</td><td>AE MIML</td><td>Low luminance intensity side limiter (MAXGAIN), MAX GAIN adjustment</td><td>32</td><td></td></tr>
<tr><td>65</td><td>AE MAXL</td><td>High luminance intensity side limiter (lower)</td><td>80</td><td>80</td></tr>
<tr><td>66</td><td>IRIS OFFSET</td><td>Iris ROM table OPEN side off set</td><td>D0</td><td>D0</td></tr>
<tr><td>67</td><td>AE KEISU</td><td>Correction coefficient during detection weighting</td><td>00</td><td>00</td></tr>
<tr><td>68</td><td>AE FUNCTION</td><td>SW for turning each AE function ON and OFF</td><td>02</td><td>02</td></tr>
</table>

Table 7-2 (3).

Address	Name	Function [ ] indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
69	BL HOSEIH	Forcible back light level setting (upper)	40	40
6A	JITEISU DOWN	Constant during loop response DOWN side	28	28
6B	JITEISU UP	Constant during loop response UP side	0D	0D
6C	AE KNEE	KNEE setting value for AE	FF	FF
6D	ORETEN SET	Variable point due to time constant error amount	13	13
6E	OMOMIOUT	Outer frame weighting amount	40	40
6F	AFC WIDE	Coefficient required for the ANF integral loop	03	03
70	AFC GAIN	Loop gain of the flickerless loop	01	01
71	AFC LIMIL	Limiter corresponding to the error rate (Lower)	60	60
72	HIST P KEISU	Histocomp level setting P for counter light determination	20	20
73	HIST H KEISU	Histocomp level setting H for counter light determination	E0	E0
74	HIST L KEISU	Histocomp level setting L for counter light determination	90	90
75	GYAKOU JITEISU	Constant during auto back light response	08	08
76	SABUN LIMIT	Limiter for counter light determination	40	40
77	FUZZY RULE1	Correction amount 1 for auto back light	A0	A0
78	FUZZY RULE2	Correction amount 2 for auto back light	D0	D0
79	FUZZY RULE3	Correction amount 3 for auto back light	E0	E0
7A	FUZZY RULE4	Correction amount 4 for auto back light	B0	B0
7B	FUZZY RULE5	Correction amount 5 for auto back light	70	70
7C	FUZZY RULE6	Correction amount 6 for auto back light	90	90
7D	FUZZY RULE7	Correction amount 7 for auto back light	B0	B0
7E	FUZZY RULE8	Correction amount 8 for auto back light	B8	B8
7F	FUZZY RULE9	Correction amount 9 for auto back light	98	98
80	FUZZY RULE10	Correction amount 10 for auto back light	78	78
81	IRIS MIN L	Iris limit value (lower)	42	42
82	IRIS MIN H	Iris limit value (upper)	02	02
83	DELTA SHUT GAIN	Shutter smoothing value setting	04	04
84	AE WAKUH	Frame data for AE detection (vertical line)	0F	0F
85	AE WAKUV	Frame data for AE detection (horizontal line)	4F	4F
86	WIDE LIMIT	ZOOM limiter WIDE (lower) Flange back adjustment	DE	
87	WIDE LIMITH	ZOOM limiter WIDE (upper)	02	
88	TELE LIMIT	ZOOM limiter TELE (lower)	22	
89	TELE LIMITH	ZOOM limiter TELE (upper)	1D	
8A	STEP ZERO	Flange back value	90	
8B	STEP ZERO SPAN	Frange back value 2	A0	
8C	ZOOM SPD FAST	Zoom speed (fast)	73	73
8D	ZOOM SPD SUPER	Zoom speed (For adjustment)	6A	6A
8E	ZS INIT SLOW	Zoom speed initial value (slow)	6A	6A
8F	ZS INIT FAST	Zoom speed initial value (fast)	6A	6A
90	ZMSPD DAMIN	Zoom speed D/A MIN value	3D	3D
91	ZS K	Zoom servo coefficient K	11	11
92	ZS L	Zoom servo coefficient L	04	04

Table 7-2 (4).

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
93	ZP HYS	Zoom potential hysteresis	03	03
94	ZOOM SPD SLOW	Zoom speed (slow)	29	29
95	AF MD2THL	MODE2 THR	20	20
96	MAXCHG THR	MAX value renewal THR	1A	1A
97	ERR THRL	Wobbling width THR	18	18
98	WOB INTV	Wobbling second interval	04	04
99	ERRPOL THR	MODE2 error possible THR	13	13
9A	MAXCHK THR	MAX CHECK THR	12	12
9B	REWOB THR	Wobbling second THR	0A	0A
9C	MODE2 INOUT	MODE2 speed switchover	8B	8B
9D	SMLWD THR	Small frame THR	0A	0A
9E	ZOOM PULSE LIMIT	Maximum zoom pulse value	EE	EE
9F	ZOOM RIZE	Zoom rise minimum speed time	0A	0A
A0	FB CURVEPEAKL	Constant for flange back adjustment	F5	F5
A1	FB CURVEPEAKH	Constant for flange back adjustment	0B	0B
A2	FB ZOOMSL	Constant for flange back adjustment	02	02
A3	FB ZOOMSH	Constant for flange back adjustment	07	07
A4	LIMITREST WIDE	Zoom limiter WIDE side	14	14
A5	LIMITREST TELE	Zoom limiter TELE side	17	17
A6	FB PEAKTHR	Constant for flange back adjustment	FF	FF
A7	FB ZOOM SLOW	Constant for flange back adjustment	1C	1C
A8	DET IRIS ALT	Iris variation check THR	02	02
A9	DET AGC ALT	AGC variation check THR	02	02
AA	LIMIT INSURANCE	Focus limiter insurance value	02	02
AB	FOCUS MODE	Focus mode Data | Adjustment mode 08 | Zoom, Focus fixed 00 | Normal	00	00
AC	LENS ADJ MODE	Flange back adjustment mode Data | Adjustment mode 00 | Nomal 01 | Flange back adjustment	00	00
AD	LENS EMRG	Lens emergency	00	00
AE	NTSC PAL/H DEF DELAY	DELAY bit=0: NTSC, 1: PAL, bit4-7=CCD correction delay	21	21
AF	FT SW	DDS display mode switchover Data | DDS display mode 00 | Y sampling display 02 | R-Y display 40 | HALL data display 82 | R ratio display 83 | B ratio display 91 | R, B ratio (M) display B0 | Focus step display	00	00

Table 7-2 (5).

Address	**Name**	**Function** **[ ] Indicate the adjustment voltage output terminal**	**Adjustment data**	
			Initial value	**Memo column**
B0	CORE OTHER	CORE MODE DATA 13 byte	10	10
B1	CORE Y GAIN	CORE FIELD DATA 0 byte	3A	3A
B2	E LOW LIGHT START	Low light chroma suppress start point	30	30
B3				
B4	YAKEI LEVEL	YAKEI mode gain setting value	40	40
B5				
B6	ZOOM DROP 1	F-No. dropping (1) by Zoom lens	60	60
B7	ZOOM DROP 2	F-No. dropping (2) by Zoom lens	75	75
B8				
B9				
BA	AWB IN B HYS	Hysteresis of AWB indoor BLUE	04	04
BB	AWB IN R HYS	Hysteresis of AWB indoor RED	02	02
BC	AWB KAKE NORM R	ADD: 35 NORM R × 1000H	20	20
BD	AWB KAKE NORM B	ADD: 36 NORM B × 1000H	20	20
BE	MF STEP CHNGE	Coefficent of MODE 2 THR	46	46
BF	MD2 LOWCON SPD	Speed for Low-contrast at MODE 2	07	07
C0	MAX CHECK NG CNT	MAX CHECK NG count	14	14
C1	AF CONTROL FLAG		0E	0E
C2	AE Y THR	Low light AE fluctuation THR 1	28	28
C3	AE Y MIN	Low light AE fluctuation THR 2	20	20
C4	MD2 SPD	Focus speed at MODE 2	61	61
C5	AE CHECK	Re-start up AE THR	10	10
C6	LOW CON THR	THR 1 for judging Low-contrast at MODE 2	10	10
C7	LOW CON THR2	THR 2 for judging Low-contrast at MODE 2	20	20
C8~EF		Not used		
F0		Input column of the unit ID No., etc. Not related to unit operations.	FF	
F1			FF	
F2			FF	
F3			FF	
F4			FF	
F5			FF	
F6			FF	
F7			FF	
F8			FF	
F9			FF	
FA			FF	
FB			FF	
FC			FF	
FD			FF	
FE			FF	
FF			FF	

Table 7-2 (6).

7-1-6. 6 Page, 1 Page Address List

The camera adjustment mode can be set by performing the following data settings at page: 6 or page: 1. (These page data can be set temporary, but when the main power (6.3V) is turned off, the original value (normal value) will be returned. Therefore, these adjustment modes can be released very simply by turning the main power off.)

(Example) The camera adjustment mode (1) is set by setting data: 01 to page: 6, address: 00. The F page write protect will also be released.

1. Page 6

Address	Adjustment Mode	Data	Function
00	Camera adjustment mode	01 10 11	Camera adjustment mode (1), F page write protect released Normal Camera adjustment mode (2), F page write protect released
01	Camera adjustment switch **Note:** To set this address adjustment mode, it is necessary to press the PAUSE button of the adjusting remote control unit after setting the data.	00 01 03 05 07 09 0B 0D 0F 11 13 15 17 1D	Normal IRIS OPEN, AGC HOLD IRIS CLOSE1, AGC HOLD IRIS CLOSE2, AGC MIN IRIS CLOSE3, AGC MAX ND0.5 SHUTTER (PAL=1/160, NTSC=1/190) ND0.8 SHUTTER (PAL=1/320, NTSC=1/380) AWB PRESET1: 3200K PRESET DATA take in WB 3200K PRESET: Indoor white balance mode AWB PRESET2: Preparation of 3200K PRESET DATA take in ZOOM HUNTING1 ZOOM SPDSLOW ZOOM HUNTING2 ZOOM SPDFAST AE FB adjustment mode (IRIS: OPEN, AGC: REF, SHUTTER: 1/100 (NTSC), 1/120 (PAL)) EEPROM PRE WRITE: Page F initial data write
05	Shutter mode	00 19	NTSC=1/60, PAL=1/50 1/2000
06	FOCUS limiter ON/OFF	00 01	FOCUS limiter ON (Normal) FOCUS limiter OFF
07	ZOOM limiter ON/OFF	00 01	ZOOM limiter ON (Normal) ZOOM limiter OFF
08	ZOOM speed SLOW/FAST	00 01 02 03	Normal ZOOM speed SLOW ZOOM speed FAST ZOOM speed SUPER SLOW
09 ★	COMPLEATED FLAG	00 01	Camera Adjustment not completed Camera adjustment completed
11 ★	ROM VERSION	03	Camera micro processor ver3
0C ★	LENS INITIAL END	00 01	During the initial operation of the lens Lens initial operation completed

Addresses with ★ are exclusively for reading.

Table 7-3.

2. Page 1

Address	Adjustment Mode	Data	Function
E6	VH address L		Title horizontal/vertical position (L)
E7	VH address H		Title horizontal/vertical position (H)

Table 7-4.

7-1-7. Adjustment Connector

Most of the measuring points for the camera section adjustment are concentrated on CN701 of the VC-147 board. Connect the oscilloscope and etc. via the measuring pin (J-6082-139-A). The following table lists the terminal numbers and the signal names of CN701.

Terminal Number	Signal Name	Terminal Number	Signal Name
1	D5V	2	NC
3	NC	4	CAM SI
5	NC	6	CAM SO
7	$\overline{\text{CS OPD}}$	8	$\overline{\text{CAM SCK}}$
9	$\overline{\text{CS CORE}}$	10	GND
11	IRIS OUT	12	NC
13	V SUB CHK	14	CAM C
15	PG CONT	16	GND
17	NC	18	CAM Y

Table 7-5.

7-1-8. Data Processing

The calculation of the DDS display and the adjusting remote control unit display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 7-6. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

The lower digits of the hexadecimal notation The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	② D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	80	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① B (b)	176	177	178	179	180	180	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) indicate the adjusting remote control unit display.

(Example) In the case that the DDS display and the adjusting remote control unit display are BD (b d).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 7-6.

7-2. CAMERA SYSTEM ADJUSTMENT

1. Power Supply Voltage Check (DD-67 board)

Subject	Option
Measuring instrument	Digital voltmeter
D5V check	
Measurement point	Pins ⑤ and ⑧ of CN901
Specified value	4.92 ± 0.15 Vdc
D4V check	
Measurement point	Pin ④ of CN901
Specified value	3.98 ± 0.15 Vdc
CAM 5V check	
Measurement point	Pins ⑦ and ⑩ of CN901
Specified value	$4.86^{+0.15}_{-0.11}$ Vdc
CAM 15V check	
Measurement point	Pin ⑫ of CN901
Specified value	15.05 ± 0.4 Vdc
CAM -9V check	
Measurement point	Pin ⑨ of CN901
Specified value	-8.5 ± 0.4 Vdc

Checking method:

1) Check that each power supply voltage satisfies the specified value.

2. Page F Data Initialization

Note: It is necessary to perform all adjustments of the camera section from the beginning again if the data of page F has been initialized.

Initializing method:

1) Check that the data of page: 6, address: 09 is 00.
(Display indicating that page F data can be initialized)
2) Check that the data of page: 6, address: 01 is 00.
3) Set data: 1D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Page F data initialization execution.
The data of all addresses of page F will be initialized.)
4) Check that the data of page: 6, address: 09 is 01.
(Displays that the initialization of page F data has been completed)
5) Set data: 00 to page: 6, address: 01. and press the PAUSE button of the adjusting remote control unit.
(Releases the page F data initialization mode)
6) After performing "Page F data modification", perform all the adjustments of the camera section (page F).

3. Page F Data Modification

The data (initial data) that is automatically written on page F after the initialization of the page F data will differ according to some camera micro processor versions. Change the data by manual input, and arrange it.

Note: When changing the data, to write the data to the non-volatile memory, press the PAUSE button of the adjusting remote control unit every time the new data is set.

Address	Data
00 (ID)	3E
0A (LOW LIGHT CS)	C0
11 (CORE EFFECT)	A0
12 (CORE MAT R)	24
14 (CORE BURST LEVEL)	38
15 (CORE CHROMA DLY)	02
17 (CORE VHAPCN)	17
5C (AWB DELAY TM)	0C
68 (AE FUNCTION)	02
6A (JITEISU DOWN)	28
6B (JITEISU UP)	0D
8C (ZOOM SPD FAST)	73
8D (ZOOM SPD SUPER)	6A
8E (ZS INIT SLOW)	6A
8F (ZS INIT FAST)	6A
94 (ZOOM SPD SLOW)	29
9E (ZOOM PULSE UNIT)	EE
A2 (FB ZOOM SL)	02
A3 (FB ZOOM SH)	07
AE (NTSC PAL/H DEF DELAY)	21
B0 (CORE OTHER)	10
B1 (CORE Y GAIN)	3A
B2 (E LOW LIGHT START)	30
C0 (MAX CHK NGCNT)	14

[Distinguishing the Camera Micro Computer (IC709) Versions]

Each version can be distinguished by looking at the part name of the camera micro processor or the data of page: 6, address: 11.

Version	Part Name	Page: 6 Address: 11
Ver.3	CXP80624-434R	03

4. 28 MHz Original Oscillation Adjustment (VC-147 board)

Subject	Not required
Measurement Point	Pin ⑰ of IC706 (14 MHz)
Measuring Instrument	Frequency counter
Adjusting Element	CT801
Specified Value	14187500 ± 71 Hz

Adjusting method:

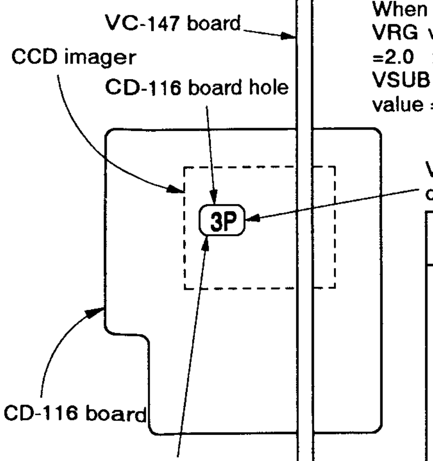
1) Use CT801 to adjust the oscillation frequency to 14187500 ± 71 Hz.

5. V SUB Adjustment (VC-147 board)

Subject	Not required
Measurement Point	Pin ⑬ of CN701 (V SUB CHK)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	04 (V SUB)
Specified Value	(Imager display voltage) ± 0.1 Vdc

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 04, and adjust the voltage of pin ⑬ of CN701 to (imager display voltage) ± 0.1 Vdc.
3) Press the PAUSE button of the adjusting remote control unit.



(Example)
When the display is 3P, the VRG voltage specified value =2.0 ± 0.1 Vdc, and the VSUB voltage specified value =14.0 ± 0.1 Vdc.

VRG voltage code address

Code address	Voltage (Vdc)
1	1.0
2	1.5
3	2.0
4	2.5
5	3.0
6	3.5
7	4.0

VSUB voltage code address (Note)

Code address	Voltage (Vdc)
E	9.5
F	10.0
G	10.5
H	11.0
J	11.5
K	12.0
L	12.5
M	13.0
N	13.5
P	14.0
Q	14.5
R	15.0
S	15.5
T	16.0
U	16.5
V	17.0
W	17.5
X	18.0
Y	18.5
Z	19.0

Fig. 7-7.

Note: This VSUB voltage code address can not be used for other models.

6. VRG Adjustment (VC-147 board)

Subject	Not required
Measurement Point	Pin ⑮ of CN701 (PG CONT)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	05 (VRG)
Specified Value	(Imager display voltage) ± 0.1 Vdc

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 05, and adjust the voltage of pin ⑮ of CN701 to (imager display voltage) ± 0.1 Vdc.
3) Press the PAUSE button of the adjusting remote control unit.

7. CCD Imager Correction Data Write

Subject	Not required
Adjustment Page	F
Adjustment	1D to 2C (CCD-DEFECT)

Perform CCD imager correction data write in the following cases.

1. When the CCD imager has been replaced
2. The ocassion of exchaning a camera micro processor or EEPROM (IC712).
3. When the page F data has been initialized

In the case of 1, as the correction data is not required for the CCD imager for repair, adjust all data of addresses 1D to 2C to "00".

In the case of 2 and 3, write the correction data attached to the shield case of VC-147 board to addresses 1D to 2C.

If the correction data are not attached, adjust all data of addresses 1D to 2C to "00".

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Write the correction data to page: F, addresses: 1D to 2C.
   Note: To perform write to the non-volatile memory, press the PAUSE button of the adjusting remote control unit before changing addresses.

Processing after completing adjustments

1) If the CCD imager has been replaced, remove the old correction data label attached on the shield case (UPPER) of VC-147 board.

8. HALL Adjustment

Subject	Not required
Measurement Point	DDS display of EVF or monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	08 (HALL GAIN) 09 (HALL OFFSET)
Specified Value	31 to 35 during IRIS OPEN B1 to B5 during IRIS CLOSE

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 40 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (HALL output display mode setting)
3) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
4) Set data: 40 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
5) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the monitor TV display), and set to W_2.
6) Set data: 30 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
7) Read the DDS display data, and set to W_1.
8) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS OPEN mode setting)
9) Read the DDS display data, and set to K_1.
10) Set data: 40 to page: F, address: 08, and press the PAUSE button.
11) Read the DDS display data, and set to K_2.
12) Convert W_1, W_2, K_1, K_2 to decimal notation, and obtain W_1', W_2', K_1', K_2'. (Refer to Table 7-6. "Hexadecimal notation-decimal notation conversion table".)
13) Calculate X_1' using the following equations (decimal notation calculation).
   $A'=W_2'+K_1'-W_1'-K_2'$ ··························Equation 1
   $B'=W_1'-K_1'$ ···Equation 2
   $X_1'=\dfrac{2048+(48\times A')-(16\times B')}{A'}$ ················Equation 3
14) Convert X_1' to hexadecimal notation, and obtain X_1.
   (Round off to one decimal place)
15) Set data: X_1 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
16) Change the data of page: F, address: 09, and adjust the DDS display data to "33".
17) Press the PAUSE button of the adjusting remote control unit.
18) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
19) Read the DDS display data, and set to W_0. If W_0 lies within the "B1" to "B5" range, perform "Processing after completing adjustments". If it lies outside the range, perform the following adjustments.
20) Convert W_0 to hexadecimal notation, and obtain W_0'.
21) Calculate X_2' using the following equations (decimal notation calculation).
   $C'=W_0'-B'-51$ ·····································Equation 4
   $X_2'=\dfrac{(128-B')\times(X_1'-48)+48\times C'}{C'}$ ···········Equation 5
   (X_1' and B' are values obtained from equations 2 and3)
22) Convert X_2' to hexadecimal notation and obtain X_2.
   (Round off to one decimal place)
23) Set data X_2 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
24) Change the data of page: F, address: 09, and adjust the DDS display data to "B3".
25) Press the PAUSE button of the adjusting remote control unit.
26) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS OPEN mode setting)
27) Check that the DDS display data lies within the "31" to "35" range.

Processing after Completing Adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)

9. Flange Back Adjustment

Subject	Chart for flange back adjustment (1998 ± 5mm from the front side of the lens Luminance: 300 ± 50 lux)
Measurement Point	Check the operations on the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	86 (WIDE LIMIT), 87 (WIDE LIMIT H), 88 (TELE LIMIT), 89 (TELE LIMIT H), 8A (STEP ZERO), 8B (STEP ZERO SPAN)

Adjusting method:

1) Turn the auto focus off. (Note 1)
2) Adjust the focus. (Note 1)
3) Check that the flange back adjustment chart center and the exposure display center coincide at both zoom lens TELE end and WIDE end.
4) Release the protect.
   Page: 6, address: 00, data: 01
5) Check that the data of page: 6, address: 09 is 00.
   (Flange back adjustment possible display)
6) Check that the page: F, address: 86 to 8B data is at the initial value. (Refer to Table 7-2. "Page F address list")
7) Set data: 01 to page: F, address: AC.
   (This causes automatic adjustment to be performed. Adjustments are performed at the zoom lens TELE end first, and then at the WIDE end. The adjustment data is automatically input to page: F, addresses: 86 to 8B.)
8) Check that the data of page: 6, address: 09 is 01.
   (Display indicating flange back adjustment completion)

Note 1: Use the adjustment remote control unit.
(HOLD switch: OFF)

Processing after completing adjustments

1) Set data: 00 to page: F, address: AC.
2) Turn off the main power supply (6.3V).

10. Flange Back Check

Subject	Siemens star (2m (or 1.4m) from the front of the lens)
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Specified Value	$D_2=D_1 \pm 5$

Checking method:

1) Set data: 01 to page: 6, address: 00. (Camera adjustment mode)
2) Set data: B0 to page: F, address: AF. (Focus step display mode)
3) Place the Siemens star 2m (or 1.4m) from the front of the lens.
4) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appears on the image displayed on the monitor TV screen.
5) Turn off the auto-focus. (Note 1)
6) Shoot the Siemens star with the zoom TELE end.
7) Adjust the focus. (Note 1)
8) Adjust to the zoom WIDE end.
9) Read the focus step value (4 digits) displayed on the TV monitor, and take the value as D_1.
10) Adjust the focus. (Note 1)
    Read the focus step value here, and take the value as D_2.
11) Check that $D_2=D_1 \pm 5$.

Note 1: Use the adjustment remote control unit.
(HOLD switch: OFF)

Process after checking

1) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.

11. SYNC Level Adjustment (VC-147 board)

Subject	Not required
Measurement Point	Pin ⑱ of CN701 (CAM Y)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	06 (VREF-Y)
Specified Value	A=150 ± 5 mV

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
3) Change the data of page: F, address: 06, and adjust so that the SYNC level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of IRIS CLOSE mode)

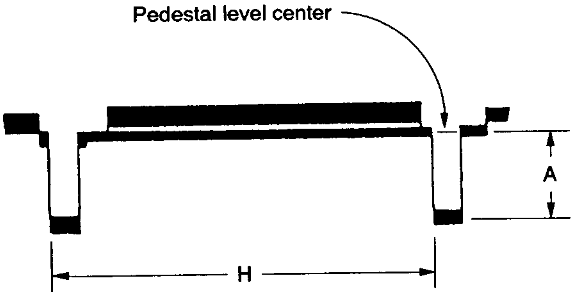


Fig. 7-8.

12. BURST Level Adjustment (VC-147 board)

Subject	Not required
Measurement Point	Pin ⑭ of CN701 (CAM C)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	07 (VREF-C)
Specified Value	A=150 ± 5 mVp-p

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
3) Change the data of page: F, address: 07, and adjust so that the burst level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of IRIS CLOSE mode)

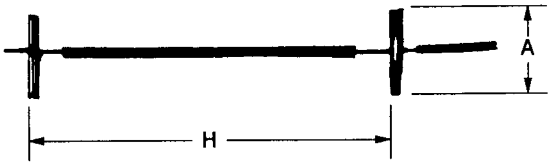


Fig. 7-9.

13. A/D Offset Adjustment

Subject	Not required
Measurement Point	DDS display on the EVF or the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	0C (AD REF)
Specified Value	46 to 47

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE AGC MIN mode setting)
3) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (Y sampling output mode setting)
4) Set data: 35 to page: 1, address: E6.
   (Setting 1 of the sampling position)
5) Set data: 6D to page: 1, address: E7.
   (Setting 2 of the sampling position)
6) Change the data of page: F, address: 0C, and adjust the average value of the DDS display (the bottom two digits of the display data at the bottom right of the EVF or the TV monitor display) to 46 to 47.
   (Set the data of address 0C to the maximum value satisfying the specification.)
7) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments
1) Turn the main power supply (6.3V) off.

14. Carrier Balance Adjustment

Subject	Not required
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	03 (CS SL)
Specified Value	The center of the black luminance point should lie within the 1 ϕ circle whose center is the principle point.

Adjusting method:
1) Release the protect.
   Page: 6, address: 00, data: 01.
2) Set data: 07 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE, AGC MAX mode setting)
3) Change the data of page: F, address: 03, and adjust so that the center of the black luminance point coincides with the principle point.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments
1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)

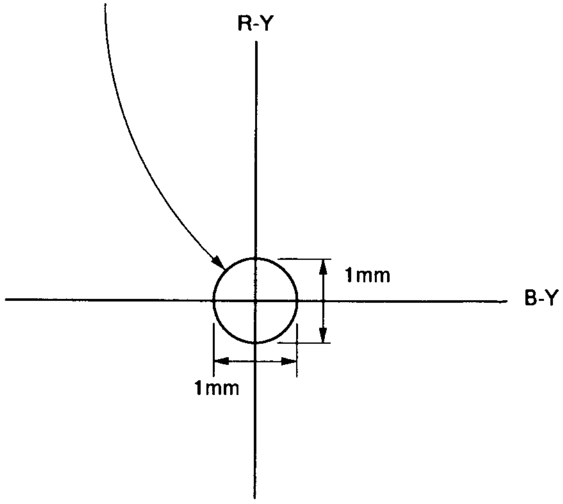

The center of the black luminance point should be within this circle

Fig. 7-10.

15. Picture Frame Setting

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor.
Specified Value	A=B, C=D, t=0 ± 0.1 msec

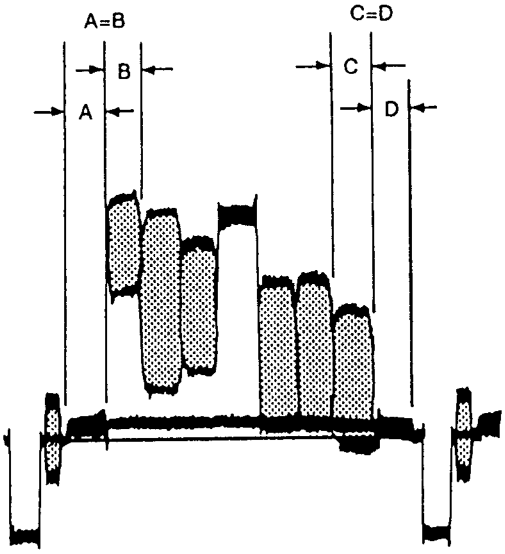
Setting method:

1) Turn the auto focus off. (Note 1)
2) Adjust the focus. (Note 1)
3) Adjust the zoom and the camera direction, and set to the specified position.
4) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "color bar chart standard picture frame".

Note 1: Use the adjustment remote control unit.
(HOLD switch: OFF)

Check on the oscilloscope

1. horizontal period



2. Vertical period

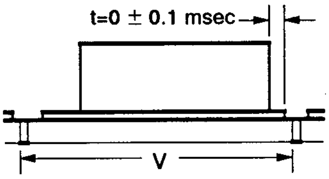
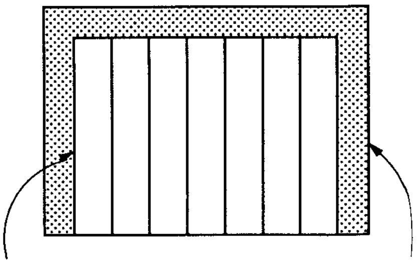


Fig. 7-11.

Check on the TV monitor



Color bar chart picture frame TV monitor picture frame

Fig. 7-12.

16. IRIS Level Adjustment (VC-147 board)

Subject	Color bar standard picture frame
Measurement Point	Pin ⑪ of CN701 (IRIS OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	63 (AGC MIN)
Specified Value	A=200 ± 5 mV

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 63, and adjust so that the IRIS OUT signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

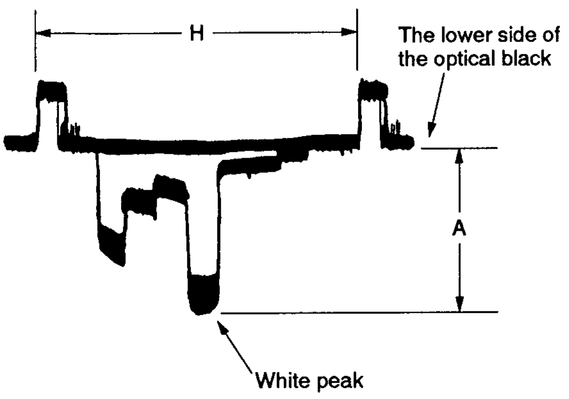


Fig. 7-13.

17. MAX GAIN Adjustment (VC-147 board)

Subject	Color bar standard picture frame
Filter	ND filter 1.0 (2 sheets) and 0.4 (1 sheet), 0.1 (1 sheet)
Measurement Point	Pin ⑱ of CN701 (CAM Y)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	64 (AE MIN L)
Specified Value	A=200 ± 5 mV

Adjusting method:

1) Place the ND filter 2.5 (1.0+1.0+0.4+0.1) on the lens.
2) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 64, and adjust so that the CAM Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

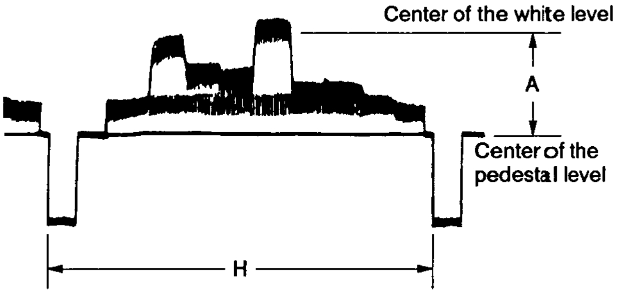


Fig. 7-14.

18. IRIS IN/OUT Adjustment

Subject	White pattern standard picture frame
Measurement Point	DDS display of the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	39 (AWB IRIS IN) 3A (AWB IRIS OUT)

Adjusting method:

1) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
2) Set data: 40 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (HALL data display)
3) Set data: 0B to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (ND0.8 shutter mode setting)
4) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the TV monitor), and set to D39.
5) Set data: D39 to page: F, address: 39, and press the PAUSE button of the adjusting remote control unit.
6) Set data: 09 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (ND0.5 shutter mode setting)
7) Read the DDS display data and set to D3A.
8) Set data: D3A to page: F, address: 3A, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the ND0.5 shutter mode)

19. Pre-white Balance Adjustment

Subject	White pattern standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	33 (R CONT REF), 34 (B CONT REF)
Specified Value	The center of the white luminance point should lie within the circle with a diameter of 1mm and whose center is the principle point

Adjusting method:

1) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (WB 3200K preset mode setting)
2) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
3) Change the data of addresses:33 and 34 of page: F alternately, and coincide the white luminance point to the principle point.
   Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses.
   If not, the new data will not written to the memory.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the preset mode)
2) Set data: 10 to page: 6, address: 00.
   (Protect mode setting)

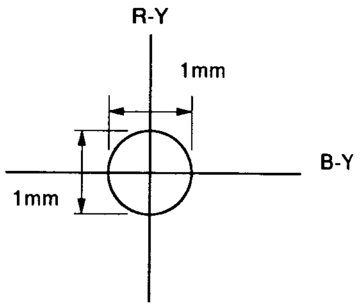


Fig. 7-15.

20. Color Reproduction Adjustment

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	18 (CORE B–Y GAIN), 19 (CORE R–Y GAIN), 1A (CORE R–Y HUE), 1B (CORE B–Y HUE)
Specified Value	All color luminance points should settle within each color reproduction frame.

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Indoor white balance mode setting)
3) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
4) Change the data of addresses 18 to 1B of page: F, and settle each color luminance point in each color reproduction frame.
   Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses. If not, the new data will not be written to the memory.
5) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01 and press the PAUSE button of the adjustment remote control unit.
   (Release of the adjustment mode)
2) Set data: 10 to page: 6, address: 00.
   (Protect mode setting)

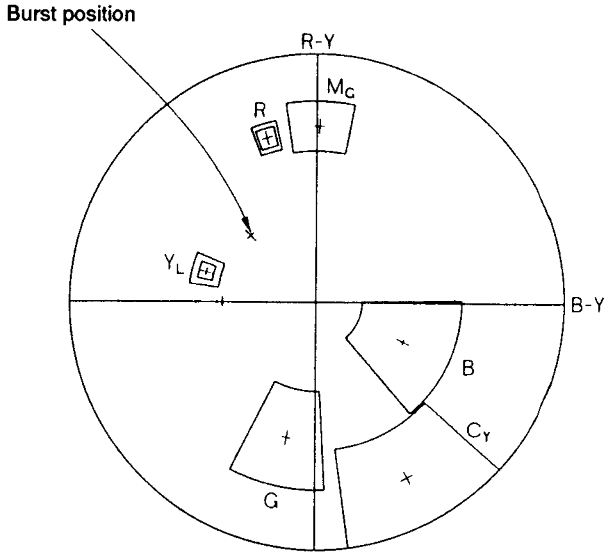


Fig. 7-16.

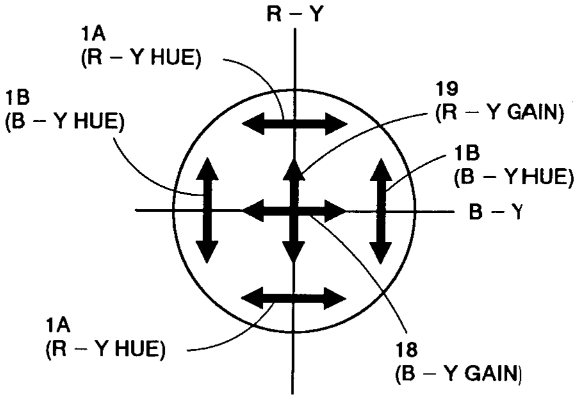


Fig. 7-17. Direction of the Movements of the Adjustment Address and Luminance Point

21. Auto White Balance Preset Adjustment

Subject	White pattern standard picture frame
Adjustment Page	F
Adjustment Address	2D (R REF L), 2E (R REF H), 2F (G REF L), 30 (G REF H), 31 (B REF L), 32 (B REF H)

Adjusting method:

1) Turn the power of the unit OFF/ON.
2) Check that the data of page: 6, address: 09 is 00.
   (Auto white balance preset adjustment possible display)
3) Set data: 11 to page: 6, address: 00, and wait at least 2 seconds.
   (Camera adjustment mode 2 setting)
5) Set data: 11 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (3200K preset data take in preparation mode)
6) Set data: 0D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (When the 3200K preset data is taken in, the data will be automatically input to addresses 2D to 32 of page F.)
7) Check that the data of page: 6, address: 09 is 01.
   (Auto white balance preset adjustment completion display)

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the auto white balance preset mode)
2) Set data: 10 to page: 6, address: 00.
   (Release of camera adjustment mode 2)

22. Auto White Balance Adjustment

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	Check with the DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	35 (AWB NORM R) 36 (AWB NORM B)
Specified Value	R ratio 2980 ± 40 B ratio 5D80 ± 40

Note: Check that "Auto White Balance Preset Adjustment" have been completed.

Adjusting method:

1) Place the C14 filter for color temperature correction on the lens.
2) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
3) Set data: D0 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance adjustment mode setting)
4) Set data: 82 to page: F, address: AF.
   (R ratio display mode setting)
5) Change the data of page: F, address: 35, and adjust the average value of the DDS display data (the display data at the bottom right of the EVF or the TV monitor) to 2980 ± 40.
6) Press the PAUSE button of the adjusting remote control unit.
7) Set data: 83 to page: F, address: AF.
   (B ratio display mode setting)
8) Change the data of page: F, address: 36, and adjust the average value of the DDS display data to 5D80 ± 40.
9) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Release of the white balance adjustment mode)
2) Set data: 10 to page: 6, address: 00.
   (Release of camera adjustment mode 2)

23. White Balance Check

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 7-18. A to C

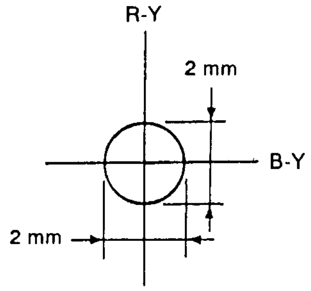


Fig. 7-18. A

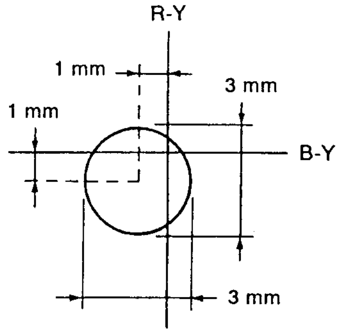


Fig. 7-18. B

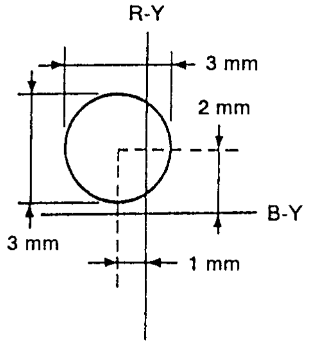


Fig. 7-18. C

Checking method:

1) Check that the lens is not covered with either filter.
2) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
3) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Indoor white balance mode setting)
4) Check that the center of the white luminance point is within the circle shown in Fig. 7-18.A.
   (Indoor white balance check)
5) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance mode setting)
6) Set data: 01 to page: F, address: 5C, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance high speed tracking mode setting)
7) Set data: 91 to page: F, address: AF (R, B ratio (M) display mode setting), and check that the top 2 digits and bottom 2 digits of the DDS display are 3D to 43. Or check that the center of the white luminance point is within the circle shown in Fig. 7-18. A.
8) Place the C14 filter on the lens.
9) Check that the center of the white luminance point settles in the circle shown in Fig. 7-18. B.
   (Auto white balance outdoor mode check)
10) Remove the C14 filter, and place the ND filter 1.3 (1.0+0.3) on the lens.
11) Check that the center of the white luminance point settles in the circle shown in Fig. 7-18. C.
   (Auto white balance outdoor mode check)

Processing after completing adjustments

1) Set data: 0C to page: F, address: 5C, and press the PAUSE button of the adjusting remote control unit.
   (Release of the auto white balance fast tracking mode)
2) Set data: 10 to page: 6, address: 00.
   (Release of camera adjustment mode 2)
3) Set data: 00 to page: 6, address: 01, and press the PAUSE button.

24. Linear Matrix Adjustment

Subject	Color bar standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3D (DMAT HUE) 3E (DMAT GAIN)

Note 1: Check that position that was set in the color bar chart picture frame "15. Picture Frame Setting" is maintained, before beginning adjustments.

Adjusting method:

1) Remove the filter C14 for color temperature correction.
2) Release the protect.
   Page: 6, address: 00, data: 01
3) Color bar data sampling mode setting
   1. Set data: F1 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   2. Set data: 2E to page: F, address: 14, and press the PAUSE button of the adjusting remote control unit.

   (Check that the colors on the monitor display at the color modulation stop mode have disappeared)
4) Specifying the Yellow position
   1. Set data: C9 to page: 1, address: E6.
   2. Set data: B6 to page: 1, address: E7.
5) Set data: 02 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (R–Y data display mode setting)
6) Read the average value of the DDS display data (Note 2), and set to Y_1.
7) Specifying the Red position
   1. Set data: 59 to page: 1, address: E6.
   2. Set data: 6D to page: 1, address: E7.
8) Select page: F and read the average value of the DDS display data (Note 2), and set to R_1.
9) Place the filter C14 for color temperature correction on the lens. (Ensure that the picture frame of the chart does not shift at this time.)
10) Specifying the yellow position.
    1. Set data: C9 to page: 1, address: E6.
    2. Set data: B6 to page: 1, address: E7.
11) Select page: F and read the average value of the DDS display data (Note 2), and set to Y_2.
12) Specifying the Red position
    1. Set data: 59 to page: 1, address: E6.
    2. Set data: 6D to page: 1, address: E7.
13) Select page: F and read the average value of the DDS display data (Note 2), and set to R_2.
14) Convert Y_1, R_1, Y_2, R_2 to decimal notation to obtain Y_1', R_1', Y_2' and R_2'.
    (Refer to Table 7-6. "Hexadecimal notation-decimal notation conversion table")
15) Calculate X_1' from the following equation (decimal notation calculation).
    $X_1'=Y_2'-Y_1'$
16) Calculate D_{3D} from the following table
    (D_{3D} is hexadecimal notation)

X_1' value	D_{3D}
$-1 \leqq X_1' \leqq 1$	F0
$X_1'>1$	F1
$X_1'<-1$	FF

17) Set data: D_{3D} to page: F, address: 3D, and press the PAUSE button of the adjusting remote control unit.
18) Calculate X_2' from the following equation (decimal notation calculation).
    $X_2'=R_2'-R_1'$
19) Calculate D_{3E} from the following table.

X_2' value	D_{3E}
$X_2' \geqq 0$	00
$0>X_2' \geqq -1$	01
$-1>X_2'$	02

20) Set data: D_{3E} to page: F, address: 3E, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Release of the sampling mode)
2) Set data: 38 to page: F, address: 14, and press the PAUSE button of the adjusting remote control unit.
   (Color modulation ON mode setting)
3) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (Release of the R–Y data display mode)
4) Turn the main power supply (6.3V) off.

Note 2: As the R-Y data and B-Y data are displayed alternatively, it will be difficult to read the R-Y data. Record this data on a tape, and perform frame advancing playback so that only the R-Y data is read.
(Example)
If the frame advancing playback is performed, the following will be displayed.
$\underline{81} \rightarrow 7A \rightarrow \underline{82} \rightarrow 7A \rightarrow \underline{80} \rightarrow 7A \rightarrow \underline{81} \rightarrow 7C \rightarrow \underline{81} \rightarrow 79$
As the R-Y data is above 80, and the B-Y data is below 7F, the data which is underlined is the R-Y data. If the average value is calculated, the R-Y data will become 81.

25. VIDEO OUT Level Check

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal (Terminated at 75 Ω)
Measuring Instrument	Oscilloscope
Specified Value	Y level=680 ± 40 mV SYNC level=300 ± 20 mV BURST level=300 ± 30 mVp-p

Checking method:

1) Check that the Y level, SYNC level and BURST level satisfy the specified values.

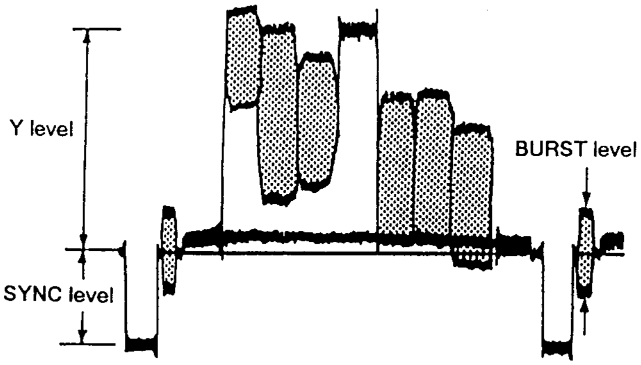


Fig. 7-19.

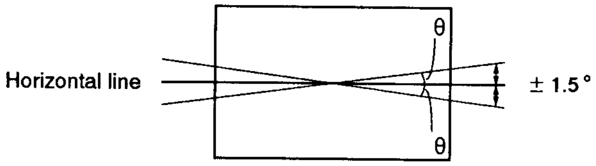
7-3. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

7-3-1. Horizontal Slant Adjustment

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Specified Value	Refer to Fig. 7-21.

Adjusting method:

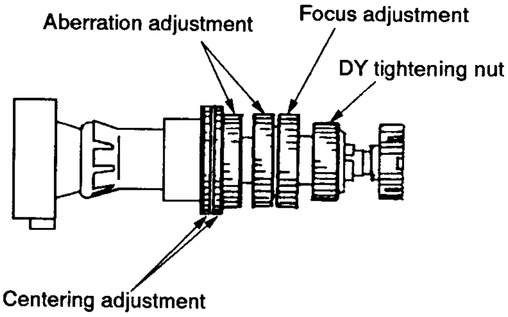
1) Adjust RV504 (BRIGHT) so that the CRT can be seen easily and clearly.
2) Loosen the DY (deflection yoke) tightening nut.
3) Rotate DY, and adjust the image so that it is horizontal.
4) Tighten the DY tightening nut.
(Do not tighten it too tightly.)



θ
Horizontal line
± 1.5 °
θ

Specified value: The image should be within ± 1.5 ° of the horizontal line.

Fig. 7-21.



Aberration adjustment
Focus adjustment
DY tightening nut
Centering adjustment

Fig. 7-22.

7-3-2. Centering Adjustment

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Specified Value	Refer to Fig. 7-23.

Adjusting method:

1) Use the centering adjustment ring and adjust so that the left, right, top, and bottom sides of the display are uniform. (Refer to Fig. 7-22.)

   Note: As the centering position changes due to earth magnetism, rotate it 360 ° in the horizontal direction, and adjust with the center section of the modifying position.

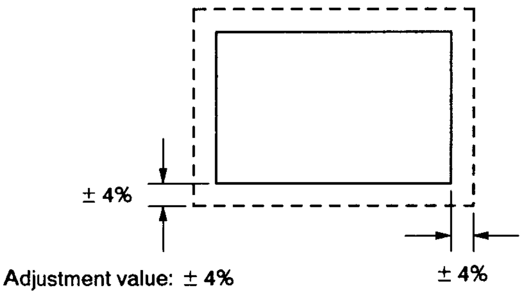


Fig. 7-23.

7-3-3. Focus Adjustment

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section

Adjusting method:

1) Adjust the focus ring to obtain the optimum focus. (Refer to Fig. 7-22.)

7-3-4. Aberration Adjustment

Model	E-E
Signal	Dot pattern
Specified Value	Refer to Fig. 7-24.

Adjusting method:

1) Adjust the aberration adjustment ring so that the tracing of the dot becomes less than twice the diameter of the dot, or the fan aberration becomes less than the diameter of the dot.
2) If the centering becomes displaced here, perform the centering adjustment from the beginning again.

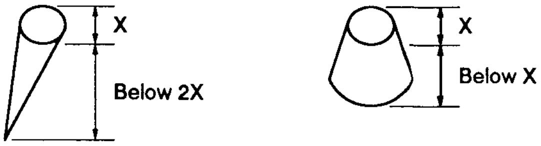


Fig. 7-24.

7-3-5. Horizontal Oscillation Frequency Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP)
Measurement Point	Positive pole terminal of C516
Measuring Instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment Element	RV501
Specified Value	2.60 ± 0.05 Vdc

Adjusting method:

1) Adjust to 2.60 ± 0.05 Vdc using RV501.

7-3-6. Horizontal Amplitude Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	C504
Specified Value	6 ± 2%

Adjusting method:

1) Rotate RV502, and adjust the top and bottom sides of the monoscope image to the top and bottom edges of the display.
2) Rotate RV504 so that the brightness is the normal level.
3) Adjust the pattern (A) of the H size adjustment capacitor (C504) to "short" or "open", so that the horizontal direction over scan becomes 6 ± 2% (Left and right totals). (Refer to Fig. 7-26.)

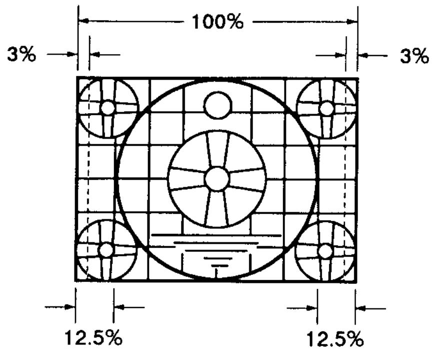
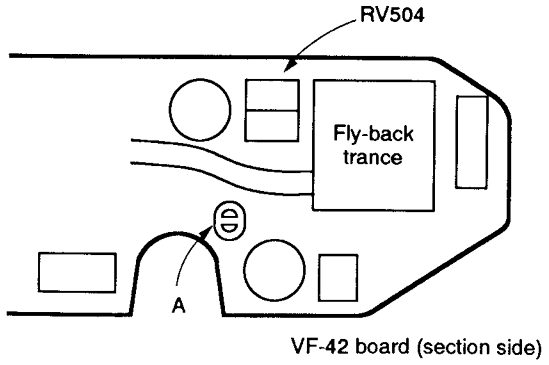


Fig. 7-25.



Section A	Size H
Open	Small
Short	Big

Fig. 7-26.

7-3-7. Vertical Amplitude Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	RV502
Specified Value	5 ± 2%

Adjusting method:

1) Adjust RV502 so that the vertical direction over scan becomes 5 ± 2% (Top and bottom totals).

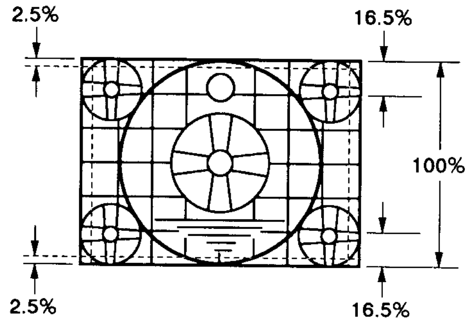


Fig. 7-27.

7-3-8. Brightness, Contrast Adjustments (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	Brightness: RV504 Contrast: RV503

Adjusting method:

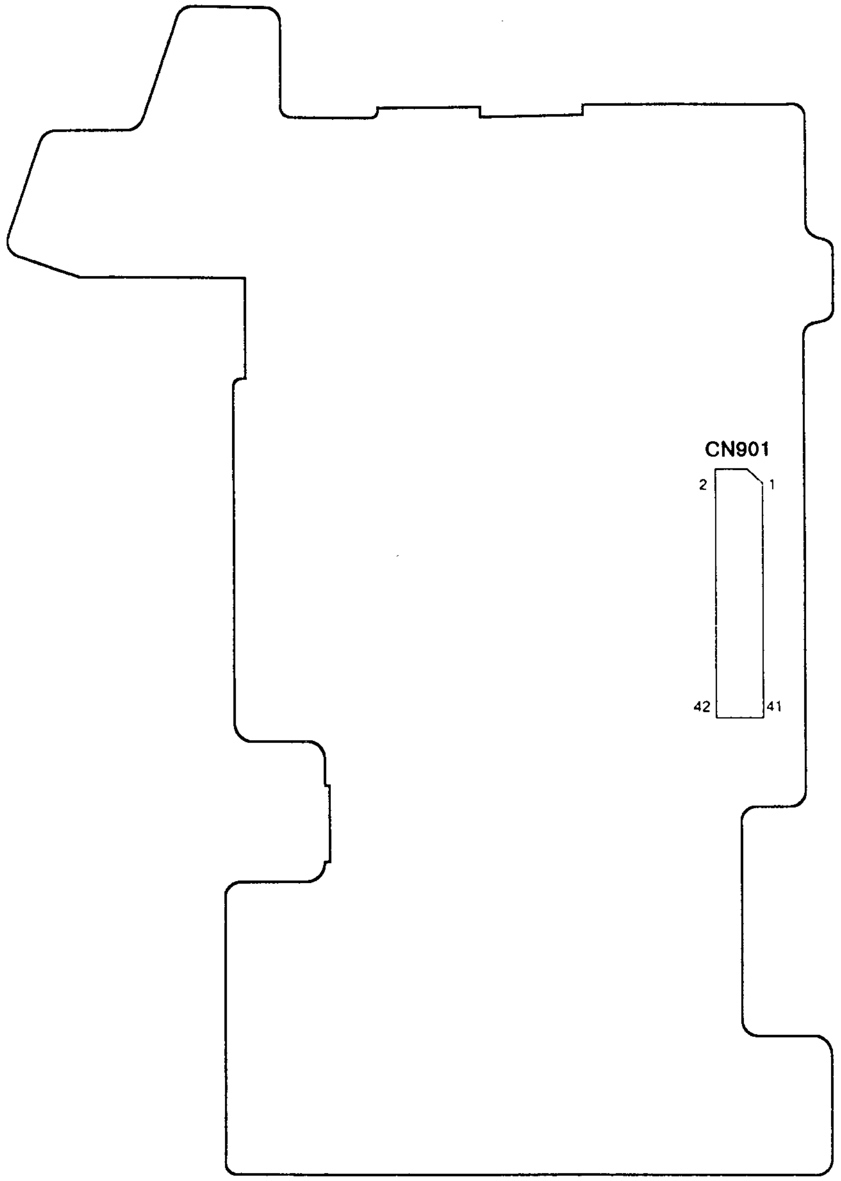
1) Rotate RV504 and RV503 alternately, and adjust so that the bright/dark sections of the gray scale are displayed correctly. (The bright section should be unsatisfactory till the cross hatch appears vague in the monoscope circle. The dark section should be unsatisfactory till the darkest section and the second darkest section of the gray scale cannot be differentiated.)

7-3-9. Horizontal Amplitude, Vertical Amplitude, Focus Check

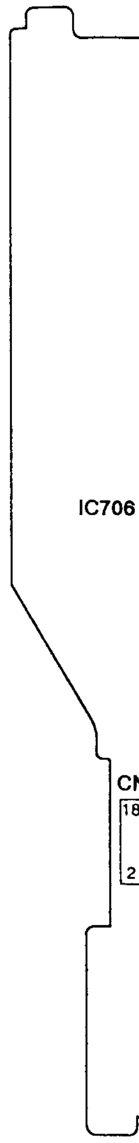
"7-3-6. Horizontal Amplitude Adjustment" and "7-3-7. Vertical Amplitude Adjustment" should both satisfy the specified values. If not, perform the adjustments from the beginning again. In this case, perform [7-3-8. Brightness, Contrast Adjustments] again. Moreover, check the focus, and if it found to be vague, perform "7-3-3. Focus Adjustment" and "7-3-4. Aberration Adjustment".

7-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

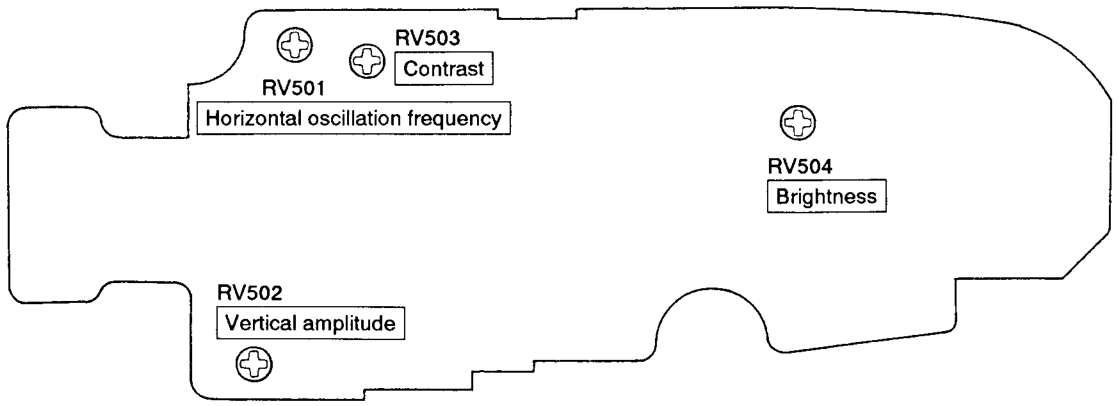
DD-67 BOARD (COMPONENT SIDE)



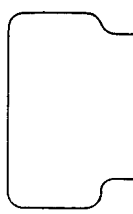
VC-147 BO



VF-42 BOARD (COMPONENT SIDE)



VF-42 BO



2 board)

ons

n over scan

0%

ns

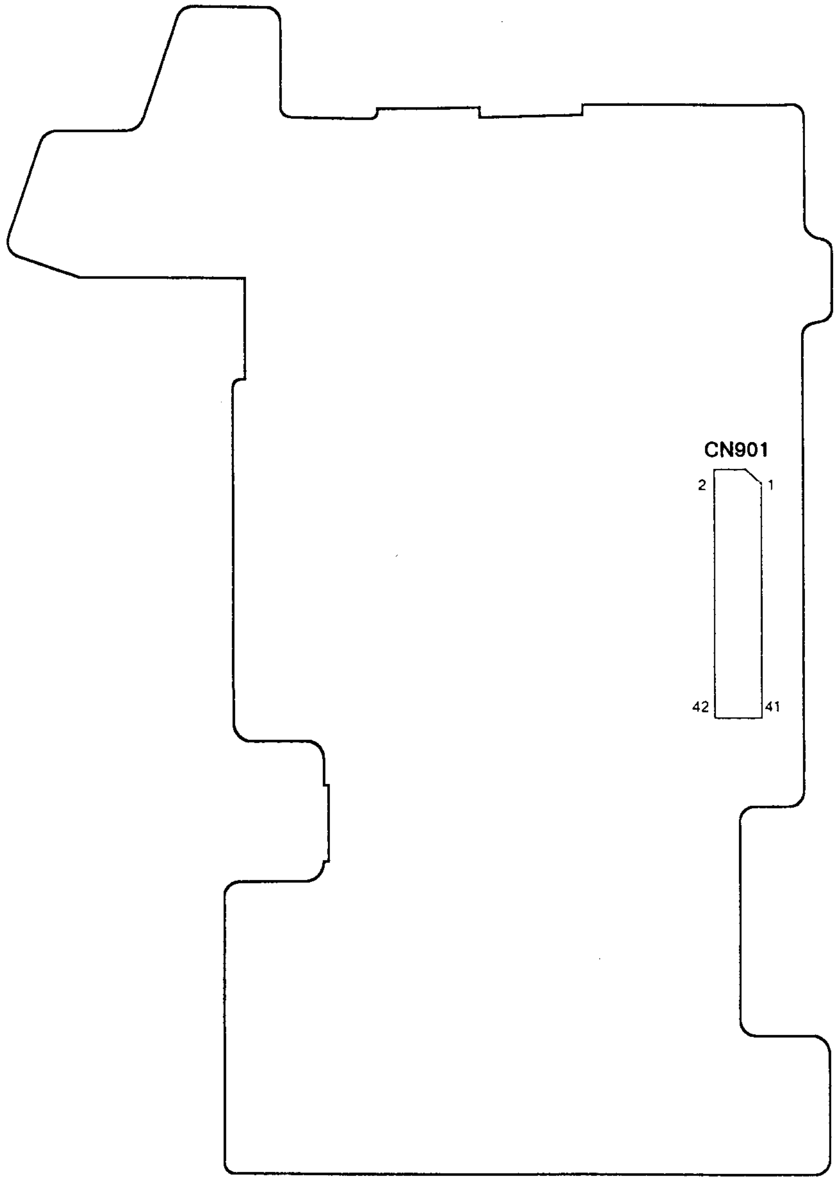
t so that the ed correctly. ill the cross . The dark section and cannot be

ıde,

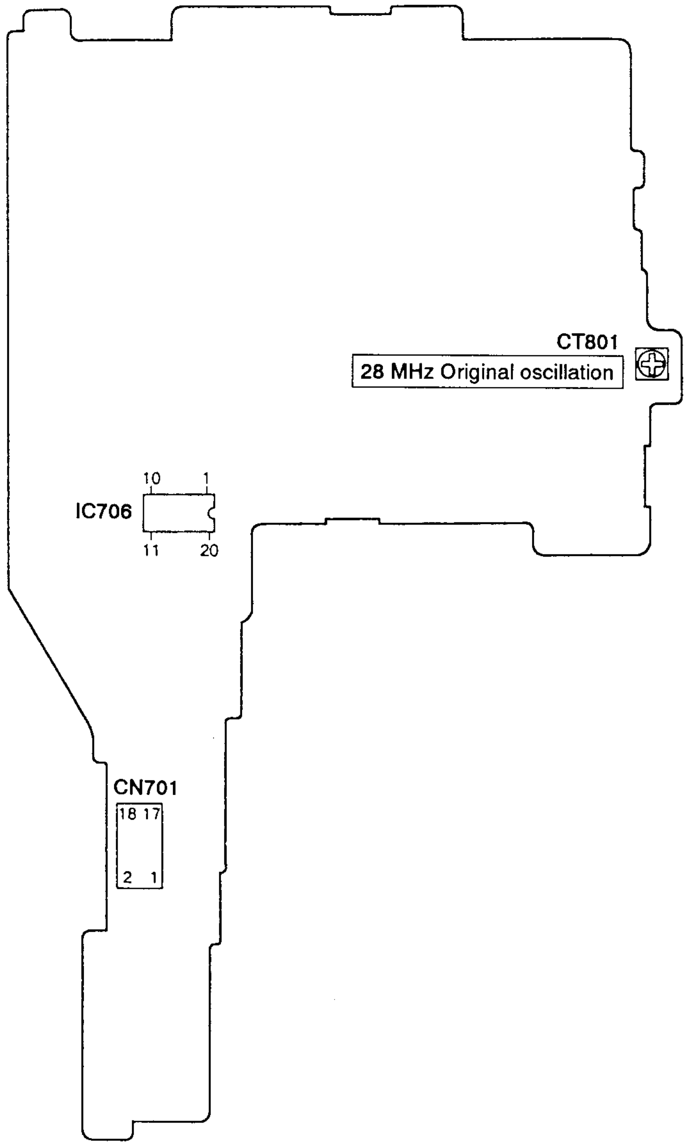
-7. Vertical fied values. gain. In this ts] again. ue, perform justment".

7-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

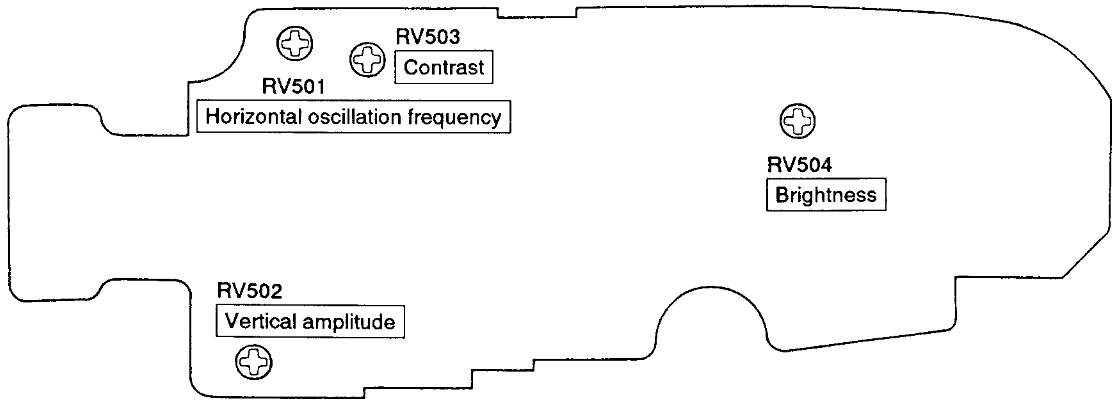
DD-67 BOARD (COMPONENT SIDE)


CN901
2
1
42
41

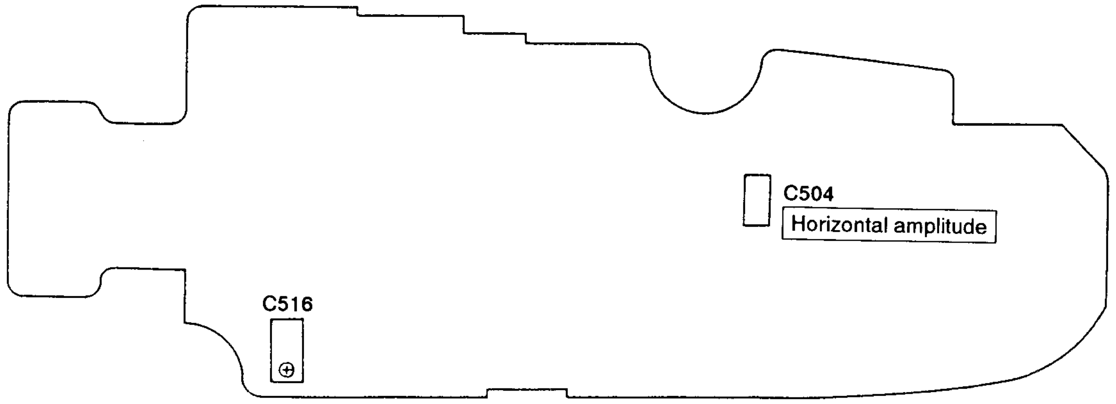
VC-147 BOARD (CONDUCTOR SIDE)


CT801
28 MHz Original oscillation
IC706
10
1
11
20
CN701
18
17
2
1

VF-42 BOARD (COMPONENT SIDE)


RV503
Contrast
RV501
Horizontal oscillation frequency
RV504
Brightness
RV502
Vertical amplitude

VF-42 BOARD (CONDUCTOR SIDE)


C504
Horizontal amplitude
C516

SECTION 8
MECHANICAL SECTION ADJUSTMENTS

For Mechanical Adjustments

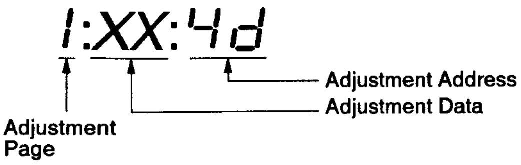
Refer to the separate volume of mechanical adjustment "8 mm Video MECHANICAL ADJUSTMENT MANUAL Ⅳ (A Mechanism)" for the adjustments and checks of mechanism section and the mechanical parts replacement. (9-973-199-11)
For setting of the track shift mode, however, refer to the following.

8-1. SETTING THE TRACK SHIFT MODE

Note: Camera part and video part should have been installed.

[Setting Method]

1) Set the adjustment commander to the HOLD ON side.
2) Set page: 1, address: 01 and data: 01, and then release the protector.
3) Set page: D and address: 01.
4) Set adjustment data to 03 (test mode 3) by PLAY or STOP button.
   (When HOLD OFF once after the setting and HOLD ON again, the display of the address data will be changed. To set the another mode with shifting, repeat the procedures from 3).)
5) Set to the HOLD OFF side in order to set the normal mode.



8-2. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surfaces (tape guides, drum, capstan shaft, pinch roller.)
2) Connect to the oscilloscope.
   CH1: VS-116 board CN002 pin ③ (PB RF)
   CH2: VS-116 board CN002 pin ④ (SWP)
3) Play back the tracking alignment tape (WR5-1CP: 8-967-995-07).
4) Check that the RF waveform of the oscilloscope is flat at both inlet and outlet side. (Refer to Fig. 8-1 and 8-2)
   If not flat, perform necessary adjustment according to the separate 8 mm Video Mechanical Adjustment Ⅳ (A Mechanism).

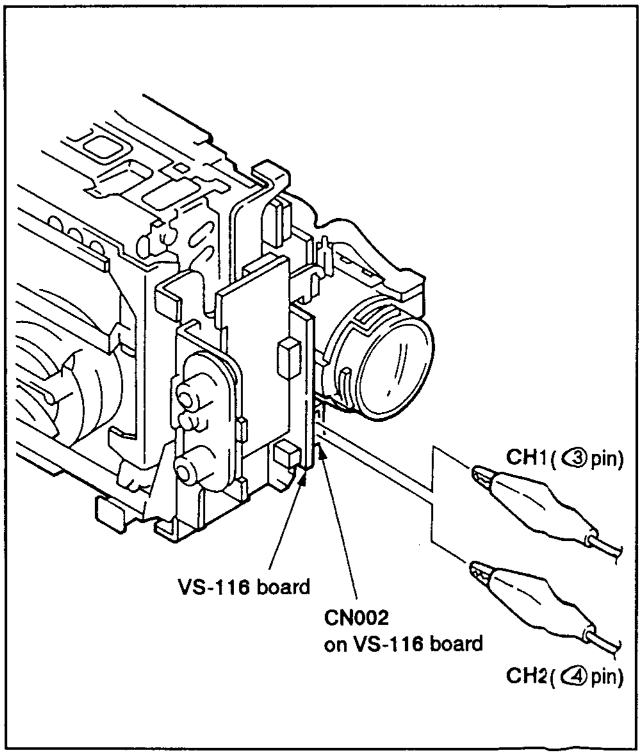


Fig.8-1.

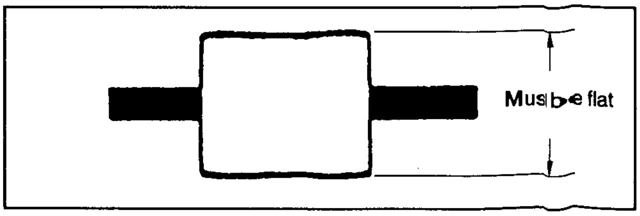


Fig.8-2.

SECTION 9
VIDEO SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 230.

9-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

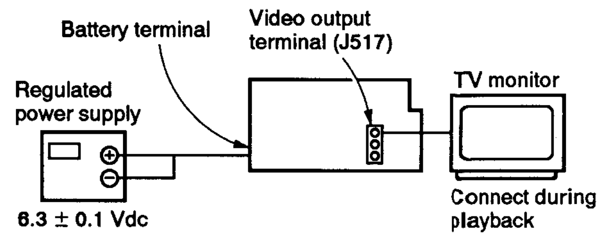
9-1-1. Equipments to be used

1) TV monitor
2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuater
10) Regulated power supply
11) Alignment tape
    For tracking adjustment (WR5-1CP)
    Part Code: 8-967-995-07
    For video frequency characteristics adjustment (WR5-6C)
    Part Code: 8-967-995-17
    For checking operations
    (WR5-4CL)$^{\text{Note 1}}$
    Part Code: 8-967-995-56
    (WR5-5CSP)$^{\text{Note 2}}$
    Part Code: 8-967-995-47
    Note: The following alignment tapes can also be used.
    1) WR5-3CL (8-967-995-36)
    2) WR5-4CSP (8-967-995-46)
12) Remote control unit for adjustment (J-6082-053-B)
13) DD-67 board extension cord (42P, 0.8 mm)
    Part Code: J-6082-195-A
14) AU-171 board, Cabinet (R) extension cord (20P, 0.8 mm)
    Part Code: J-6082-196-A
15) Mecha deck extension cord (30P, 0.8 mm)
    Part Code: J-6082-167-A

9-1-2. Connecting the equipments

Unless specified otherwise, connect the measuring instruments as shown in Fig. 9-1 and perform the adjustments.

- Camera/player power switch ········Position of the player
- Connect the adjusting remote control unit to the remote terminal (DD-67 board CN902).


Battery terminal
Video output terminal (J517)
Regulated power supply
TV monitor
6.3 ± 0.1 Vdc
Connect during playback

Connect the pattern generator as follows.

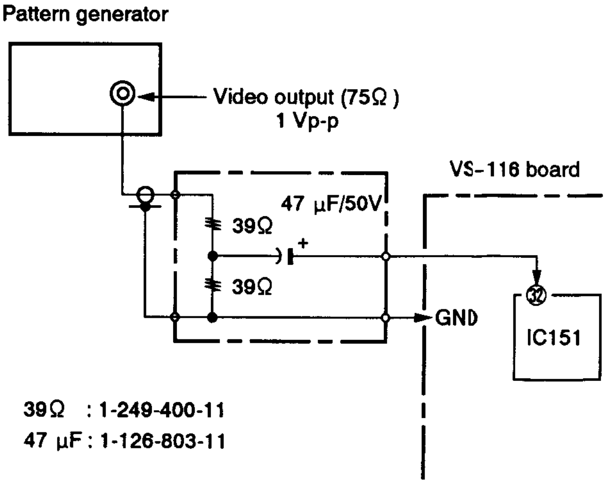

Pattern generator
Video output (75Ω)
1 Vp-p
VS-116 board
47 μF/50V
39Ω
39Ω
+
GND
32
IC151
39Ω : 1-249-400-11
47 μF : 1-126-803-11

Fig. 9-1.

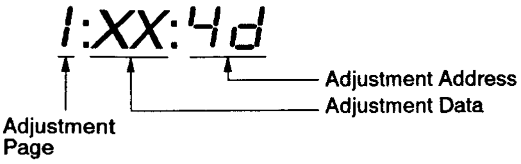
SECTION 8
MECHANICAL SECTION ADJUSTMENTS

For Mechanical Adjustments
Refer to the separate volume of mechanical adjustment "8 mm Video MECHANICAL ADJUSTMENT MANUAL Ⅳ (A Mechanism)" for the adjustments and checks of mechanism section and the mechanical parts replacement. (9-973-199-11)
For setting of the track shift mode, however, refer to the following.

8-1. SETTING THE TRACK SHIFT MODE

Note: Camera part and video part should have been installed.

[Setting Method]
1) Set the adjustment commander to the HOLD ON side.
2) Set page: 1, address: 01 and data: 01, and then release the protector.
3) Set page: D and address: 01.
4) Set adjustment data to 03 (test mode 3) by PLAY or STOP button.
   (When HOLD OFF once after the setting and HOLD ON again, the display of the address data will be changed. To set the another mode with shifting, repeat the procedures from 3).)
5) Set to the HOLD OFF side in order to set the normal mode.



8-2. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surfaces (tape guides, drum, capstan shaft, pinch roller.)
2) Connect to the oscilloscope.
   CH1: VS-116 board CN002 pin ③ (PB RF)
   CH2: VS-116 board CN002 pin ④ (SWP)
3) Play back the tracking alignment tape (WR5-1CP: 8-967-995-07).
4) Check that the RF waveform of the oscilloscope is flat at both inlet and outlet side. (Refer to Fig. 8-1 and 8-2)
   If not flat, perform necessary adjustment according to the separate 8 mm Video Mechanical Adjustment Ⅳ (A Mechanism).

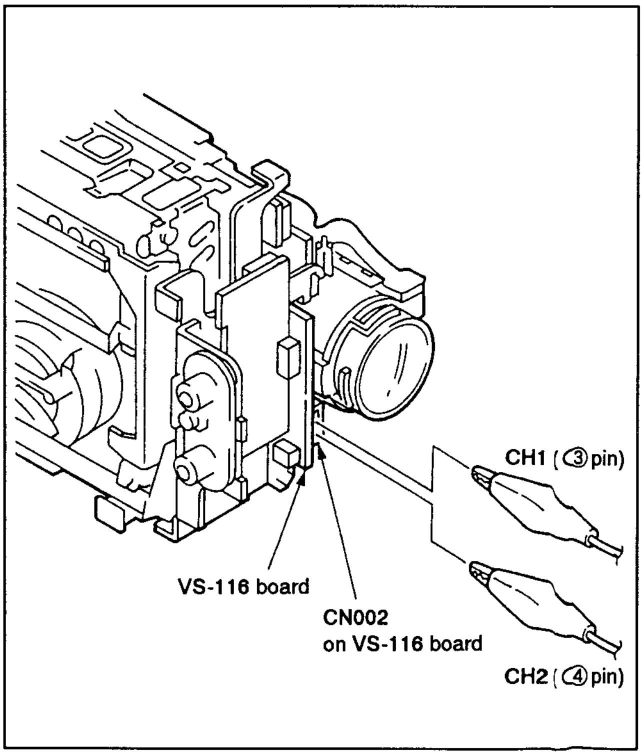


Fig.8-1.

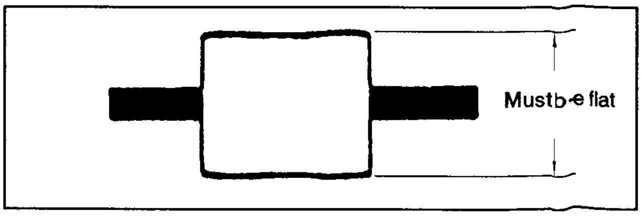


Fig.8-2.

SECTION 9
VIDEO SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 230.

9-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

9-1-1. Equipments to be used

1) TV monitor
2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuater
10) Regulated power supply
11) Alignment tape
    For tracking adjustment (WR5-1CP)
    Part Code: 8-967-995-07
    For video frequency characteristics adjustment (WR5-6C)
    Part Code: 8-967-995-17
    For checking operations
    (WR5-4CL)[Note 1]
    Part Code: 8-967-995-56
    (WR5-5CSP)[Note 2]
    Part Code: 8-967-995-47
    Note: The following alignment tapes can also be used.
    1) WR5-3CL (8-967-995-36)
    2) WR5-4CSP (8-967-995-46)
12) Remote control unit for adjustment (J-6082-053-B)
13) DD-67 board extension cord (42P, 0.8 mm)
    Part Code: J-6082-195-A
14) AU-171 board, Cabinet (R) extension cord (20P, 0.8 mm)
    Part Code: J-6082-196-A
15) Mecha deck extension cord (30P, 0.8 mm)
    Part Code: J-6082-167-A

9-1-2. Connecting the equipments

Unless specified otherwise, connect the measuring instruments as shown in Fig. 9-1 and perform the adjustments.

- Camera/player power switch ········Position of the player
- Connect the adjusting remote control unit to the remote terminal (DD-67 board CN902).

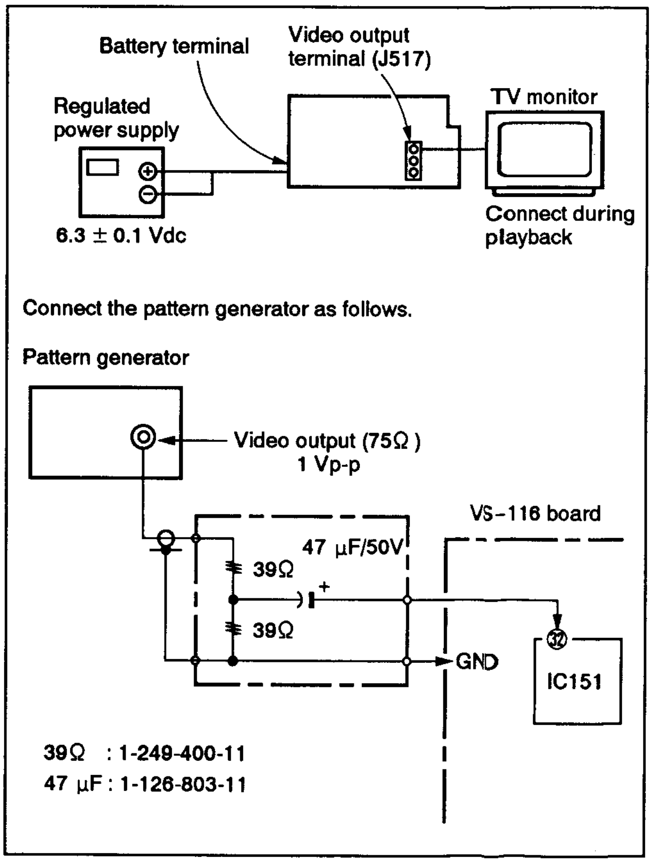

Battery terminal
Video output terminal (J517)
TV monitor
Regulated power supply
6.3 ± 0.1 Vdc
Connect during playback
Connect the pattern generator as follows.
Pattern generator
Video output (75Ω) 1 Vp-p
VS-116 board
47 μF/50V
39Ω
39Ω
GND
32
IC151
39Ω : 1-249-400-11
47 μF : 1-126-803-11

Fig. 9-1.

9-1-3. How to Set the REC Mode

1. REC key forbidden accept mode cancel
    1. Connect the adjustment remote controller to the REMOTE terminal.
    2. Turn on the power.
    3. Turn on the HOLD switch of the adjustment remote controller.
    4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
    5. Select the page: D address: 02, and set the data to AF. (REC key forbidden accept mode cancel)
    6. Press PAUSE button on the adjustment remote controller. (Write to the non-volatile memory)

The REC key is accepted through the above procedure.

2. REC mode setting
    1. Connect the collector of Q200 on the VS-116 board and GND with a jumper wire. (CCD delay (IC154) active mode setting)
    2. Turn on the HOLD switch of the adjustment remote controller.
    3. Select the page: 1 address: A3, and set data to 01.
    4. Select the page: 1 address: 0B, and set data to C8. (Line input mode setting)
    5. Turn off the HOLD switch of the adjustment remote controller.
    6. Press REC buttons of the adjustment remote controller.
    7. Remove the jumper wire and perform "3. Procedure after completed the adjustment", after completing adjustment.

3. Procedure after completed the adjustment
   Be sure to return the mode to REC key forbidden accept mode after adjustment.
    1. Connect the adjustment remoter controller to the REMOTE terminal.
    2. Turn on the power.
    3. Turn on HOLD switch of the adjustment remote controller.
    4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
    5. Select the page: D address: 02, and set the data to AE. (Setting of the REC key forbidden accept mode)
    6. Press PAUSE button on the adjustment remote controller. (Write to the non-volatile memory)

9-1-4. Precautions upon adjustment

The EVF (Electronic viewfinder) is not required for adjusting the video section.
Remove the following connector when removing the EVF section.

1. VS-116 board CN102 (6 PIN)

The front panel section assembly is required for adjusting the video section. Remove the following connectors when removing the front panel section assembly.

1. AU-171 board CN601 (5 PIN)

The cabinet (R) is required for adjusting the video section. Use the extension cord (J-6082-196-A) when adjusting the video section.

9-1-5. Set-up during Adjustment

As the video signal obtained from the pattern generator is used as an adjustment signal during electric adjustments, ensure that this video output signal is within the specification. Connect the oscilloscope to pin ㉜ of IC151 on the VS-116 board, and check that the amplitude of the sync signal of the video signal is approximately 0.15V, the amplitude of the video section is approximately 0.35V, the amplitude of the burst signal is approximately 0.15V and flat, and that the level ratio of the burst signal and the [red] signal is 0.30: 0.66. The video signal (color bar) used for electric adjustments is shown in Fig. 9-2.

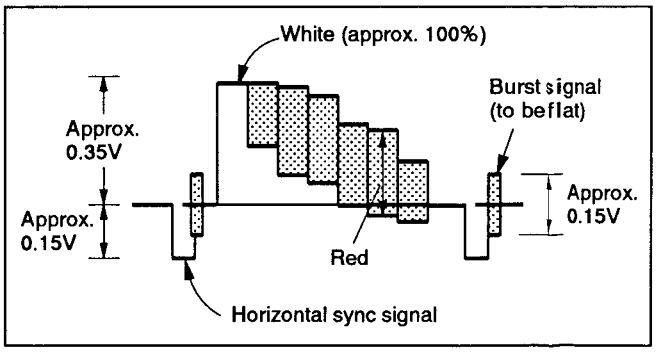


Fig. 9-2. Color Bar Signal of the Pattern Generator

9-1-6. Alignment Tape

The following table lists alignment tapes which are available. Use the tape specified in the signal column for each adjustment. If the type of tape to be used for checking operations is not specified, use whichever type.

Name	Recording mode	Tape type	Tape speed	Recording contents		Usage
				Video area	PCM area	
Tracking WR5-1CP	L	MP	SP	CH2: Signal for 1 MHz tape path adjustment		Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-6C	L	MP	LP	RF sweep 0 to 10 MHz Marker 1, 3.58, 5.5, 7 MHz		Frequency characteristics adjustment
Operation check (SP mode) WR5-5CSP	L	MP	SP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation	• Audio signal (PCM) Monoscope section 20 Hz 20 sec. } Color bar section 400 Hz 20 sec. } Color bar section 14 kHz 20 sec. } Color bar section Repeated 4 times 1 kHz 4 minutes	Checking operations
Operation check (LP mode) WR5-4CL	L	MP	LP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation		

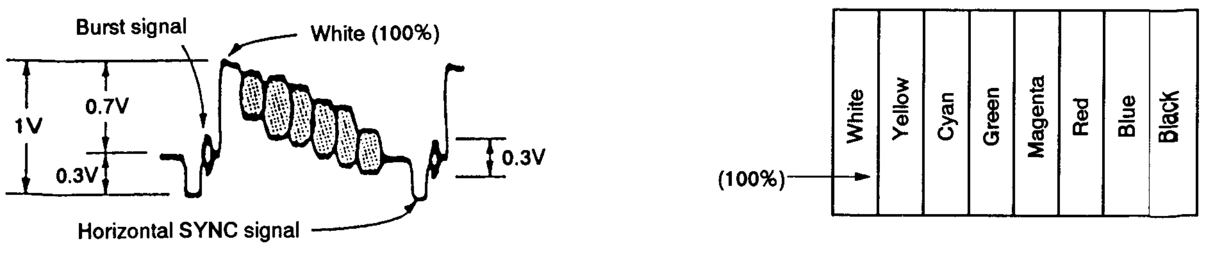
Note: Recording mode
L ······· Conventional mode
E ······· hi8 (hi band) mode

Tape type
MP····· Particle type metal tape
ME····· Evaporated type metal tape

Table 9-1.

Fig. 9-3. shows the 75% color bar signals recorded on the alignment tape.

Note: Measure using the video input/output terminal (Terminated at 75 Ω)



Color bar signal waveform

Color bar pattern

Fig. 9-3. Color Bar Signals of the Alignment Tape

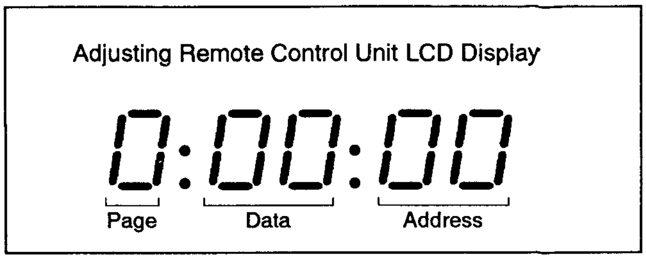
9-1-7. Output Level and Impedance

Video output : Phono jack
Output signal: 1 Vp-p, 75Ω
unbalanced, sync negative
Audio output : Phono jack
Specified output: –7.5 dBs
(at load impedance 47 kΩ)
Impedance less than 2.2 kΩ

9-1-8. Service Mode

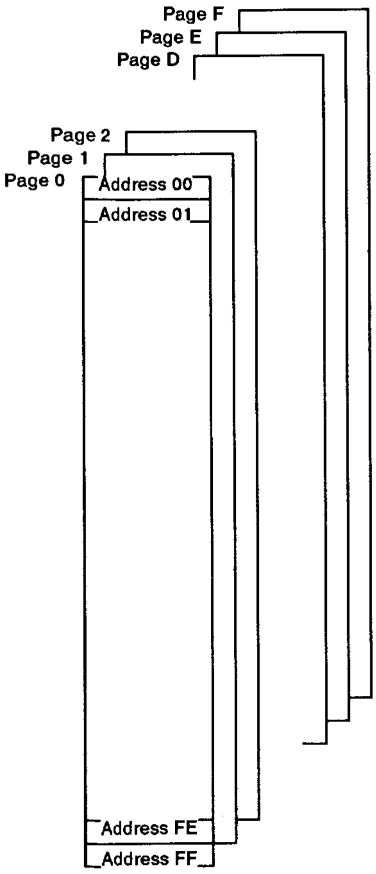
1. Setting the Service mode

The service mode consists of the adjustment mode which adjusts the EVR and the test mode which displays the condition of the unit.
The unit can be shifted into the test mode and adjustment mode by connecting the adjusting remote control unit (set the HOLD switch to the HOLD side).



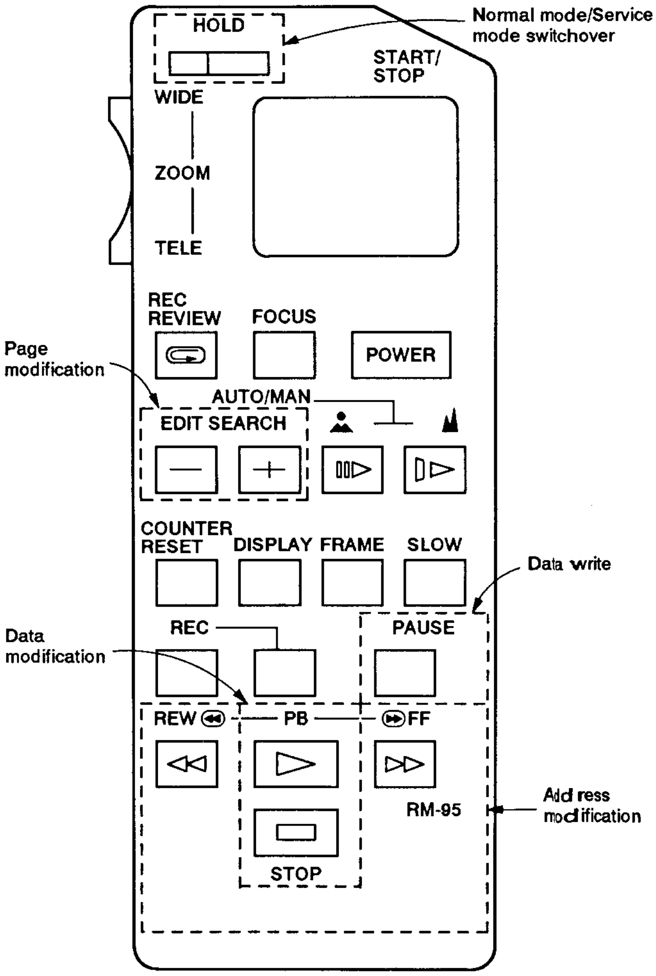
Adjusting Remote Control Unit LCD Display
0:00:00
Page
Data
Address

(1) Service LANC memory map



Page F
Page E
Page D
Page 2
Page 1
Page 0
Address 00
Address 01
Address FE
Address FF

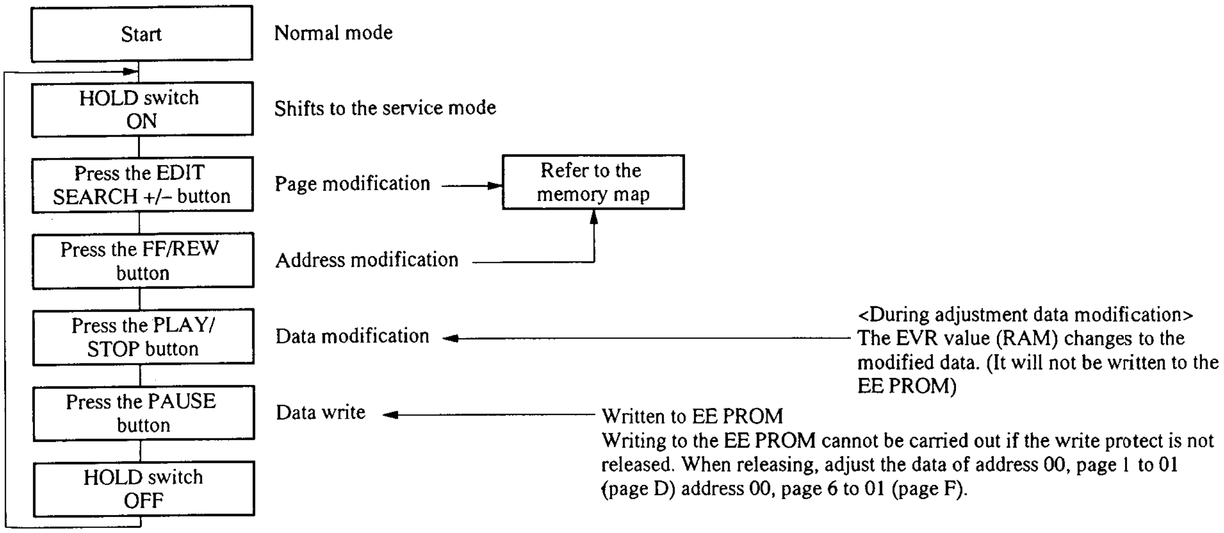
Adjusting remote control unit RM-95 (J-6082-053-B)



HOLD
Normal mode/Service mode switchover
START/ STOP
WIDE
ZOOM
TELE
REC REVIEW
FOCUS
POWER
Page modification
AUTO/MAN
EDIT SEARCH
COUNTER RESET
DISPLAY
FRAME
SLOW
Data write
REC
PAUSE
Data modification
REW
PB
FF
RM-95
Address modification
STOP

Page	Page allocation	Description
0	Not used	
1	Mode Control RAM, I/O	RAM and I/O interface data memory area required for operating the mode controller. Data is not held when the power is turned off because this area is not ROM.
2~4	Mechanical Control RAM, I/O	RAM and I/O memory area of the mechanical controller.
5	Not used	
6~8	Camera Control RAM, I/O	RAM and I/O memory area of the camera control.
9	Not used	
A	Camera Control RAM, I/O	RAM and I/O memory area of the camera control.
B, C	Not used	
D	VTR EE-PROM	ROM memory area of the VTR part. Data of this area is held by EE-PROM when the power is turned off. Releasing protect is required for changing data.
E	Not used	
F	Camera EE-PROM	ROM memory area of the camera part. Data of this area is held by EE•P•ROM when the power is turned off.

(2) Shifting to the Service Mode Using the Adjusting Remote Control Unit


Start
Normal mode
HOLD switch ON
Shifts to the service mode
Press the EDIT SEARCH +/– button
Page modification
Refer to the memory map
Press the FF/REW button
Address modification
Press the PLAY/ STOP button
Data modification
Press the PAUSE button
Data write
HOLD switch OFF

<During adjustment data modification>
The EVR value (RAM) changes to the modified data. (It will not be written to the EE PROM)

Written to EE PROM
Writing to the EE PROM cannot be carried out if the write protect is not released. When releasing, adjust the data of address 00, page 1 to 01 (page D) address 00, page 6 to 01 (page F).

Command Name	**Command Function**	**Normal LANC command**
Page Up	Page +1	Edit Search +
Page Down	Page –1	Edit Search –
Direc Page Set	Sets the specified page	Event Clear
Address Up	Address +1	Fast Forward
Address Down	Address –1	Rewind
Data Up	Data +1	Play Back
Data Down	Data –1	Stop
Store	Write the data to the EE PROM. RAM	Pause

2. Types of Self-diagnostic Feature

MODE		Contents
TEST	Camera adjustment	Refer to Camera Adjustment
	Switching position adjustment	Refer to each adjustment page
	Battery DOWN adjustment	
	Video, Audio adjustment	
ADJUST	Pass Adjustment track shift	When adjusting tape pass, set this mode and shift the tracking.
	Emergency STOP inhibition	Detection of emergency is inhibited. This allows the following items. • Power is not turned off when the battery is ended. • SP/LP is not automatically distinguished. • Emergence is not detected except for TOP/END detection of the TAPE.
	Read of emergence code	The following functions are added to the emergency display function currently in use. ① The lithium battery is not required because to memorize into EE-PROM is allowed. ② The first emergency and the last emergency are memorized. ③ The mode when the emergency is generated is memorized, in addition to the emergency contents.
	Motor single check	Rotating in forward direction, reverse direction, stopping of each motor can be separately controlled. • Drum motor • Capstan motor • Loading motor
	Function switch check	The acceptance of the function switch of the unit can be confirmed by designating an address. On the contrary, RM-95 can command the substitution for the function switch of the unit.
	Mechanical switch check	The contents of the mechanical switch and the mode switch can be confirmed.
	Sensor check	The following sensor is input by performing A/D converting, and the A/D converted value can be confirmed. TOP sensor, End sensor, S REEL FG, T REEL FG, Thermistor for SWP correction, DEW sensor.
	Reception contents check of wireless remote control	The received code contents of the remote control code can be confirmed.

3. Page D Write Protect

Release/set the page D write protect.

Page 1	Address 00

Data	Function
00	Normal (Write protect condition)
01	Write protect release

4. Page F Write Protect

Release/set the page F write protect.

Page 6	Address 00

Data	Function
10	Normal (Write protect condition)
01	Write protect release

5. Test Mode Setting

Each type of test mode is set/released. Release the protect (page: 1, address: 00, data: 01), before setting the data.

Page D	Address 01

Data	Function
00	Normal
01	Test mode 1 Various emergency inhibition and release Drum, capstan, loading motor, reel, tape top, end, DEW SP/LP automatic distinction inhibition, manual switchover 5 minutes pause release inhibition Power off inhibition • release by battery end
02	Test mode 2 1'CH frequency response adjustment (Not used) SP/LP automatic distinction inhibition, manual switchover
03	Test mode 3 Track shift Plays back the track shift Rear lock distinction inhibition during PB SP/LP automatic distinction inhibition, manual switchover
04	Test mode 4 Rear lock mode Rear lock playback is performed SP/LP automatic distinction inhibition, manual switchover
05	Test mode 5 SP/LP automatic distinction inhibition, manual switchover

※ This address data will be recorded on the non-volatile memory by pressing the PAUSE button on the adjusting remote control unit. Take note, as when this happens, the test mode will not be released even if the main power is turned off (6.3 Vdc).

※ Be sure to return the data of this address data to 00 after completing adjustments/repairs.

6. Emergency code

Troubles (errors) can be checked.

Page D	Address 06

First emergency code

……The first error code generated

Page D	Address 07

Last emergency code

…… The last error code generated (this data will be modified each time an error occurs.)

※ Be sure to rewrite the data of addresses 06 and 07 to 00 after completing repairs/adjustments.

※ When rewriting data, be sure to press the PAUSE button of the remote control unit after resetting the data.

Code	Error condition
00	No error
01	Loading motor error
02	Reel error during unloading
03	Other reel errors
04	Capstan error
05	DRUM FG error during drum start up
06	DRUM PG error during drum start up
07	DRUM FG error during drum regular condition
08	DRUM PG error during drum regular condition
09	DRUM Phase error during drum regular

7. Emergency mode

The operation mode during an error outbreak can be checked.

Page D	Address 08

First emergency mode
……The operation mode when the first error is generated

Page D	Address 09

Last emergency mode
……The operation mode when the last error is generated
(This data will be modified each time an error occurs.)

※ Be sure to rewrite the data of addresses 08 and 09 to 00 after completing repairs/adjustments.

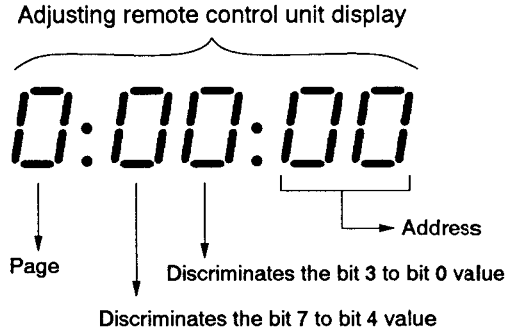
※ When rewriting data, be sure to press the PAUSE button of the remote control unit after setting the data.

※ Addresses 08 and 09 of page 0 and addresses 08 and 09 of page D have the same functions.

Code	Error condition
00	BEFOR INITIALIZE
01	EJECTED
02	NORMAL STOP
03	FF
04	NORMAL REC
06	NORMAL PB
07	PB PAUSE
12	LOADING
14	REC PAUSE
26	X1
27	1/5 SLOW
31	UNLOADING
36	-X1
37	-1/5 SLOW
46	CUE
47	1/10 SLOW
56	REVIEW
57	-1/10 SLOW
62	STOP TAPE END
66	X2
67	FRAME
72	STOP TAPE TOP
76	-X2
77	-FRAME
83	REWIND
85	REC REVIEW(+)
95	REC REVIEW(-)
A2	EMERGENCY STOP
A5	EDIT SEARCH(+)
B1	EMERGENCY UNLOADING
B2	STOP EMERGENCY 1
B5	EDIT SEARCH(-)
C2	STOP EMERGENCY 2
E2	STOP NO CASSETTE
F5	EDIT PAUSE

8. Bit value Discrimination

It is necessary to discriminate the bit value by the adjusting remote control unit display data for the following items. Discriminate if the bit value is "1" or "0" using the following table.


Adjusting remote control unit display
0:00:00
Address
Page
Discriminates the bit 3 to bit 0 value
Discriminates the bit 7 to bit 4 value

	Remote Control Unit Display	Bit Value			
		bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ→	8	1	0	0	0
	9	1	0	0	1
	A(A)	1	0	1	0
	B(b)	1	0	1	1
	C(c)	1	1	0	0
	D(d)	1	1	0	1
Ⓑ→	E(E)	1	1	1	0
	F(F)	1	1	1	1

(Example) When the remote control unit display data is "8E", the bit values of bit 7 to bit 4 can be discriminated from column Ⓐ, and that of bit 3 to bit 0 can be discriminated from column Ⓑ.

9. Check of Tape Distinction Switch, etc.

Page 2	Address E9

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
			$\overline{\text{CC DOWN}}$	$\overline{\text{REC PROOF}}$	ME/$\overline{\text{MP}}$		

“1”=ME tape
“0”=MP tape

“1”=Recording impossible
“0”=Recording possible

“0”=During cassette compartment lock

Page 1	Address 3D

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
V MUTE	A MUTE	VA PB MODE	JOG	PB CLOG	REC CLOG	SYNC DET	LP/$\overline{\text{SP}}$

“1”=LP mode playback
“0”=SP mode playback

“1”=SYNC is detected
“0”=SYNC is not detected

“1”=CLOG is detected
“0”=Normal

“1”=When the PB RF signals are being playback normaly
“0”=Others

“1”=JOG mode
“0”=Other

“1”=Playback mode
“0”=Others

“1”=AUDIO MUTE: ON
“0”=AUDIO MUTE: OFF

“1”=VIDEO MUTE: ON
“0”=VIDEO MUTE: OFF

Page 1	Address 42

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
						DEW	

“0”=Dew outbreak
“1”=Others

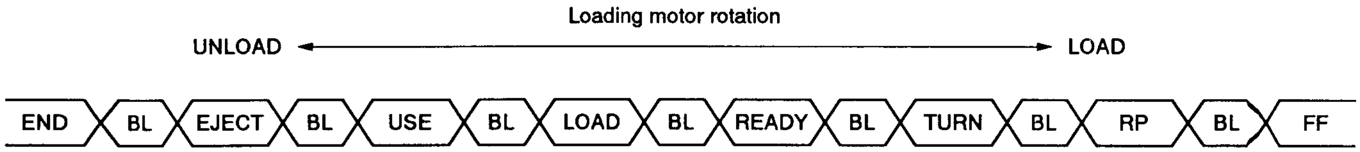
10. Mode Switch Check

The mode switch position (mechanical section condition) can be checked.

Page 2	Address E9

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
MSW 0	MSW 1	MSW 2	$\overline{\text{CC DOWN}}$				

			POSITION	FUNCTION	$\overline{\text{CC DOWN}}$
1	1	1	BL	Interval of each position	
0	1	1	END	FULL END processing (T side lock removal)	1
0	0	1	EJECT	Cassette compartment ejection	1
1	0	1	USE	EJECTED (Unskate end)	1
0	0	1	LOAD	LOADING (Skate in)	0
1	0	0	READY	NORMAL STOP position	0
1	1	0	TURN	OFF of pinch roller only with PB ↔ REV (oscillating position)	0
0	1	0	RP	PB, REC, RVS, REV, REW	0
0	0	0	FF	FF/CUE	0


Loading motor rotation
UNLOAD
LOAD
END
BL
EJECT
BL
USE
BL
LOAD
BL
READY
BL
TURN
BL
RP
BL
FF

11. Mechanism Control A/D Port Input Voltage Check

Page 4	Address 14

Checking method:

1) Set data: 02 to page: 4, address: 0E.
   (A/D conversion processing active)
2) Set the data in the following table to page: 4, address: 13, and select the A/D port to be displayed.

Data	A/D Port
00	Pin (62): AN0 (T REEL FG)
01	Pin (61): AN1 (S REEL FG)
02	Pin (60): AN2 (ATF ERROR)
03	Pin (59): AN3 (BATT SENS)
04	Pin (58): AN4 ($\overline{\text{DEW}}$)

3) Check the data of page: 4, address: 14.

Adjusting Remote Control Unit Display Data	A/D Port Input Voltage
FF to 00	Approx. 5 Vdc to 0 Vdc

12. Tape Top/End Sensor Condition Check

Page 4	Address 0A

Checking method:

1) Set data: 10 to page: 4, address: 0E.
   (Tape top/end sensor condition sampling processing active)
2) Check the data of page: 4, address: 0A.

Adjusting Remote Control Unit Display Data	Tape Top/End Sensor Condition
0 0	Tape present (Middle of tape)
0 1	Tape end
1 0	Tape top
1 1	No tape

Tape end sensor condition
Tape top sensor condition

"0"=Non-active (Not receiving light)
"1"=Active (Receiving light)

13. Battery Voltage Check

Page 4	Address 10

Adjusting Remote Control Unit Display Data	Battery Voltage
FF	Approx. 10 Vdc
F0	Approx. 9.4Vdc
E0	Approx. 8.8Vdc
D0	Approx. 8.2Vdc
C0	Approx. 7.5Vdc
B0	Approx. 6.9Vdc
A0	Approx. 6.3Vdc
90	Approx. 5.6Vdc
80	Approx. 5.0Vdc

14. Individual Operations of the Drum, Capstan, and Loading Motor

Page 4	Address 11

1) Adjust the mechanical section to the loading completion condition.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Set data: 01 to page: 4, address: 0E.
   (Control permission from the adjusting remote control unit of the motor)
4) By setting the data in the following table to page: 4, address: 11, the corresponding motors can be operated individually.
5) After checking the operations, turn off the main power (6.3 Vdc).

Data	Operation
00	Normal
02	Drum forward rotation
04	Drum reverse rotation
06	Capstan forward rotation
08	Capstan reverse rotation
0A	Loading motor forward rotation
0C	Loading motor reverse rotation
01	All motors stop
03	
05	
07	
09	
0B	
0D	
0F	

15. Mode control micro processor key matrix check

The key input can be checked.

Page 1	Address 68~6D

	Bit7	Bit6 (K IN 6)	Bit5 (K IN 5)	Bit4 (K IN 4)	Bit3 (K IN 3)	Bit2 (K IN 2)	Bit1 (K IN 1)	Bit0 (K IN 0)
Address 68 (K OUT 0)		LENS COVER OPEN (MF-214 S973)	VTR POWER (CF-34 S997)		PAUSE (VK-32 S984)		EJECT (DD-67 S901)	
Address 69 (K OUT 1)			CAMERA POWER (CF-34 S997 SW-223 S519)	FF (VK-32 S983)	PLAY (VK-32 S980)	REW (VK-32 S979)	STOP (VK-32 S976)	
Address 6A (K OUT 2)							COUNTER RESET (CF-34 S995)	
Address 6B (K OUT 3)					TIME (CF-34 S996)	DATE (CF-34 S993)		
Address 6C (K OUT 4)								
Address 6D (K OUT 5)							START/ STOP (SW-223 S520)	

"1"=key switch ON
"0"=key switch OFF

16. Wireless Remote Control Unit Reception Content Check

Page 1	Address 1E

Wireless remote control unit key pressed	**Data**
None	FF
TELE	9A
WIDE	9B
Start/stop	99
Rewind	1B
Fast forward	1C
Stop	18
Playback	1A
Data screen	5A
Pause	19
SLOW	23

17. EDIT Switch, Remote Commander Switch Check

Page 1	Address 0A

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
REC MODE (SP/LP)	REMOTE COMMANDER		EDIT				

Bit6:
"1"=OFF
"0"=ON

Bit4:
"1"=EDIT ON
"0"=EDIT OFF

Bit7:
"1"=LP
"0"=SP

18. White Balance Mode and Focus Mode Display/Switchover

Page 1	Address 9A

The mode can be switched when the data of page: 1, address: A3 is set to 04.

Data	White Balance Mode
* 1	INDOOR
* 2	OUTDOOR
* 3	HOLD
* 6	AUTO

Data	Focus Mode
0 *	Manual
1 *	Automatic

* : 0 to F

19. LCD, LED Check, etc.

Page 1	Address A3

Data	Mode
00	Normal
01	Key input prohibited
04	Camera function renewal prohibited

20. Page D Address List

Note 1: The adjustment data initial value is the data to be input before performing video section adjustment (page D), when the page D data has been erased due to some cause.

Note 2: The data listed in the adjustment data memo column are the fixed data.
Check that these data have not been accidentally rewritten, after completing adjustments.

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
00	Category code	Not used		
01	Test mode		00	00
02	Destination flag		AE	AE
03	BATT END	Battery end adjustment	8C	
04	SW POSITION	SW POSITION adjustment	00	
05	SW POSITION	SW POSITION adjustment	0A	
06	EMERGENCY code (FIRST)	Error code and mode are memorized. Rewrite the data of these addresses to 00 after repairs/adjustments	00	00
07	EMERGENCY code (LAST)		00	00
08	EMERGENCY mode (FIRST)		00	00
09	EMERGENCY mode (LAST)		00	00
0A	SR DATA (MP Normal SP)	CXA1207 serial data	24	24
0B	SR DATA (MP Normal LP)	CXA1207 serial data	16	16
0C	SR DATA (ME Hi8 SP)	CXA1207 serial data	24	24
0D	SR DATA (ME Hi8 LP)	CXA1207 serial data	16	16
0E	SR DATA (ME Normal SP)	CXA1207 serial data	24	24
0F	SR DATA (ME Normal LP)	CXA1207 serial data	16	16
10	SR DATA (MP Hi8 SP)	CXA1207 serial data	24	24
11	SR DATA (MP Hi8 LP)	CXA1207 serial data	16	16
12	SR DATA (EDIT ON Normal)	CXA1207 serial data	16	16
13	SR DATA (EDIT ON Hi8)	CXA1207 serial data	16	16
14	CAM TITLE BLU R-Y	Camera titler color adjustment [Blue]. Not used		
15	CAM TITLE BLU B-Y	Camera titler color adjustment [Blue]. Not used		
16	CAM TITLE GRN R-Y	Camera titler color adjustment [Green]. Not used		
17	CAM TITLE GRN B-Y	Camera titler color adjustment [Green]. Not used		
18	CAM TITLE CYN R-Y	Camera titler color adjustment [Light blue]. Not used		
19	CAM TITLE CYN B-Y	Camera titler color adjustment [Light blue]. Not used		
1A	CAM TITLE RED R-Y	Camera titler color adjustment [Red]. Not used		
1B	CAM TITLE RED B-Y	Camera titler color adjustment [Red]. Not used		
1C	CAM TITLE VIO R-Y	Camera titler color adjustment [Violet]. Not used		
1D	CAM TITLE VIO B-Y	Camera titler color adjustment [Violet]. Not used		
1E	CAM TITLE YEL R-Y	Camera titler color adjustment [Yellow]. Not used		
1F	CAM TITLE YEL B-Y	Camera titler color adjustment [Yellow]. Not used		
20	Permission plug		94	94
21	Adjustment plug	FORCED VTR ON, CAM ON etc DATA — MODE 01 — FORCED CAMERA POWER ON 02 — FORCED VTR POWER ON	00	00
22~29		Not used		

Table 9-2 (1).

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
2A	SLOW ADJ (FOWARD)		00	00
2B	SLOW ADJ (REVERSE)		00	00
2C	STILL ADJ		00	00
2D	BATT REMAIN LEVEL 1	Amount of remaining battery 1	A0	
2E	BATT REMAIN LEVEL 2	Amount of remaining battery 2	99	
2F	BATT REMAIN LEVEL 3	Amount of remaining battery 3	94	
30~42		Not used		
43	1-ch M.T NORMAL	1 ch playback frequency characteristic adjustment [IC158 ②]	C0	
44				
45	2-ch M.T NORMAL	2 ch playback frequency characteristic adjustment [IC158 ③]	C0	
46	REC C RF (EE)	REC C RF level adjustment (EE) [IC156 ⑩]	B8	
47	REC C RF (PB)	REC C RF level adjustment (PB) [IC156 ⑩]	00	00
48	RF CONT (ME)	ATF RF level (ME) [IC158 ⑤]	64	64
49	RF CONT (MP)	ATF RF level (MP) [IC158 ⑤]	70	70
4A	EE LEVEL	EE level adjustment [IC156 ⑮]	70	70
4B		Not used		
4C	COMB ADJ	Chroma comb filter adjustment [IC156 ③]	A8	
4D	SR-IR	IR adjustment [IC156 ②]	AE	
4E	Y-FM CARRIER (Hi8)			
4F	Y-FM CARRIER (NORMAL)	Y-FM carrier frequency adjustment [IC156 ⑤]	A8	
50	Y-FM DEVIATION (Hi8)			
51	Y-FM DEVIATION (NORMAL)	Y-FM deviation adjustment [IC156 ⑥]	95	
52	REC Y LEVEL (EE Hi8 ME)			
53	REC Y LEVEL (EE Hi8 MP)			
54	REC Y LEVEL (EE NOR ME)	REC Y recording current adjustment (ME) [IC156 ⑦]	95	
55	REC Y LEVEL (EE NOR MP)	REC Y recording current adjustment (MP) [IC156 ⑦]	95	
56	REC Y LEVEL (PB)	Playback REC Y level [IC156 ⑦]	00	00
57	PB Y LEVEL (EE)	EE PB Y level [IC158 ⑮]	00	00
58	PB Y LEVEL (Hi8)			
59	PB Y LEVEL (NORMAL)	Normal PB Y level adjustment [IC158 ⑮]	B0	
5A	EMPHASIS INPUT LEVEL	EE emphasis input level adjustment [IC156 ④]	A5	
5B	PB LINE LEVEL	Playback emphasis input level adjustment [IC156 ④]	AF	
5C~79		Not used		
7A	1.5 IR	1.5 MHz IR adjustment [IC158 ⑥]	A0	
7B	1.5 DEV	1.5 MHz deviation adjustment [IC158 ⑦]	A0	
7C~FF		Not used		

Table 9-2 (2)

9-2. POWER SYSTEM ADJUSTMENTS

1. Oscillator Frequency Check (DD-67 board)

Mode	Camera record
Subject	Arbitrary
Measurement Point	Q903 collector
Measuring Instrument	Frequency counter
Specified Value	510 ± 35 kHz

Adjusting method:

1) Check that the oscillator frequency satisfies the specified value.

2. Power Voltage Check (DD-67 board)

Mode	Camera record
Subject	Arbitrary
Measuring Instrument	Digital voltmeter
EVF 5V check	
Measurement Point	Pin ⑪ of CN901
Specified Value	4.93 ± 0.15 Vdc
D5V check	
Measurement Point	Pins ⑤ and ⑧ of CN901
Specified Value	4.92 ± 0.15 Vdc
D4V check	
Measurement Point	Pin ④ of CN901
Specified Value	3.98 ± 0.15 Vdc
VID 5V check	
Measurement Point	Pins ⑰, ⑳ of CN901
Specified Value	4.90 ± 0.10 Vdc
RP 5V check	
Measurement Point	Pin ㉒ of CN901
Specified Value	4.89 ± 0.15 Vdc
AU5V check	
Measurement Point	Pin ⑲ of CN901
Specified Value	4.90 ± 0.15 Vdc
CAM5V check	
Measurement Point	Pins ⑦ and ⑩ of CN901
Specified Value	$4.86^{+0.15}_{-0.11}$ Vdc
CAM15V check	
Measurement Point	Pin ⑫ of CN901
Specified Value	15.05 ± 0.4 Vdc
CAM –9V check	
Measurement Point	Pin ⑨ of CN901
Specified Value	–8.5 ± 0.4 Vdc

9-3. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Page D Initial Value Input

If the page D data has been erased due to some cause, input the page D initial value before performing adjustments. For details on the initial value, refer to "Page D address list" in "9-1-8. Service Mode".

Mode	E-E
Signal	Arbitrary
Adjustment Page	D
Adjustment Address	00 to 7D

Input method:

1) Release the write protect.
   Page: 1, address: 00, data: 01
2) Select page D, and input the initial value to each address.
   (After setting the data (initial value), be sure to press the PAUSE button of the adjusting remote control unit before changing the address.)

2. Battery End Adjustment

Mode	Camera record
Signal	Arbitrary
Measurement Point	LCD display of the adjusting remote control unit
Measuring Instrument	
Adjustment Page	D
Specified Value	03 (BATT END) 2D (BATT REMAIN LEVEL 1) 2E (BATT REMAIN LEVEL 2) 2F (BATT REMAIN LEVEL 3)

Connection:

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 9-4.

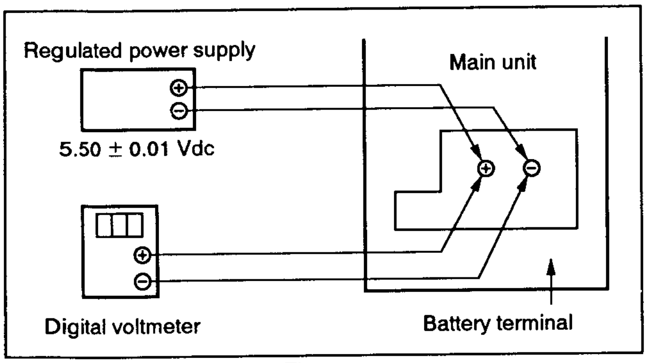


Fig. 9-4.

Adjusting method:

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 6.3 ± 0.1 Vdc.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Set data: 01 to page: D, address: 01.
   (Test mode 1 setting)
4) Set to the camera recording mode.
5) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 5.50 ± 0.01 Vdc.
6) Select page: 4, address: 10, read the adjusting remote control unit display data, and set to DEND.
7) Set data DEND to page: D, address: 03, and press the PAUSE button of the adjusting remote control unit.
8) Convert DEND to decimal to obtain DEND′. (Refer to Table 7-6. "Hexadecimal notation – decimal notation conversion table")
9) Obtain the adjustment data (decimal) by following formula (decimal notation calculation), convert to hexadecimal and enter the data into each adjustment address.
   Address: 2D D2D′=DEND′+18
   Address: 2E D2E′=DEND′+14
   Address: 2F D2F′=DEND′+8
   Note: After setting the data, be sure to press the PAUSE button of the adjusting remote control unit before changing the address.
10) Set data: 00 to page: D, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (Test mode 1 release)
11) Perform "Battery Down Check".

3. Battery Down Check

Mode	Camera record
Subject	Arbitrary

Connection

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 9-4.

Checking method:

Remove the adjusting remote control unit, and perform the following check. If the check is not satisfied, perform from the beginning again.

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display becomes 6.3 ± 0.1 Vdc.
2) Set to the camera recording mode.
3) Decrease the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.70 ± 0.01 Vdc.
4) Check that the 🔋 mark on the EVF (viewfinder) display is not lighted up. (TALLY lamp lights up).
5) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.58 ± 0.01 Vdc.
6) Check that the 🔋 mark and the TALLY lamp on the EVF display on the EVF display blinks every second.
7) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.42 ± 0.01 Vdc.
8) Check that the 🔋 mark and the TALLY lamp on the EVF display are blinking faster, the VTR stops and the power supply turns off.

9-4. SERVO SYSTEM ADJUSTMENTS

1. Switching Position Adjustment (VS-116 board)

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1CP)
Measurement Point	CH1: Pin ④ of CN002 (RF SWP) CH2: Pin ③ of CN002 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	04 (SW POSITION) 05 (SW POSITION)
Specified Value	t1=0 ± 10 μsec

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Set data: 0A to page: D, address: 05.
3) Change the data of page: D, address: 05 and minimize "t1". (Coarse adjustment)
4) Press the PAUSE button of the remote control unit.
5) Change the data of page: D, address: 04, and adjust so that the switching position (t1) becomes the specified value. (Fine adjustment)
6) Press the PAUSE button of the adjusting remote control unit.

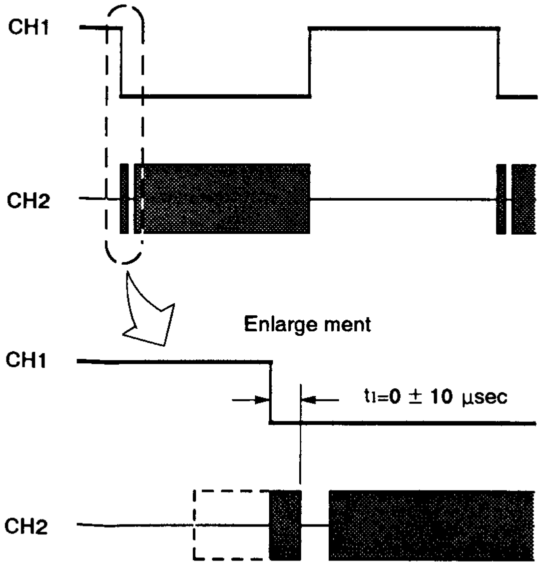


Fig. 9-5.

9-5. VIDEO ADJUSTMENTS

The adjustments of the video system must be performed according to the following adjustment procedure.
The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Check that the sync signal and the color burst signal satisfy the specification specified during the adjustment set-up shown in Fig. 9-2.

[Adjusting procedure]

1) Playback frequency characteristic adjustment
2) Flying erase check
3) VXO oscillation frequency check
4) EE level adjustment
5) IR adjustment
6) Y/C separation adjustment
7) Emphasis input level adjustment
8) PB Y level adjustment
9) PB LINE OUT level adjustment
10) Y FM carrier frequency adjustment
11) Deviation adjustment
12) Chroma emphasis fo adjustment
13) REC Y level adjustment
14) REC C level adjustment
15) REC ATF level check
16) REC AFM level check

1. Playback Frequency Characteristic Adjustment (VS-116 board)

Note 1: The adjusting element for CH2 is shown in parentheses [ ].

Mode	Playback
Signal	Alignment tape: For frequency characteristic adjustment (WR5-6C)
Measurement Point	CH1: Pin ③ of CN002 EXT TRIG: Pin ④ of CN002
Measuring Instrument	Oscilloscope TRIG SLOPE: +, [–]
Adjustment Page	D
Adjustment Address	43 (MT 1CH) [45 (MT 2CH)]
Specified Value	3.58 MHz level: 5.5 MHz level= 4: (3 ± 0.3)

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) After memorizing the data of page: D, address: 05, set data: 10.
3) Press the PAUSE button of the adjusting remote control unit.
4) Change the data of address: 43 [45] of page D, and adjust the level ratio of 3.58 MHz and 5.5 MHz of PB RF output waveform to the specified value.
   Note 2: After each address adjustment, be sure to press the PAUSE button of the adjusting remote control unit and memorize the data.
5) Set the data memorized at step 2) to page: D, address: 05, and press the PAUSE button of the adjusting remote control unit.

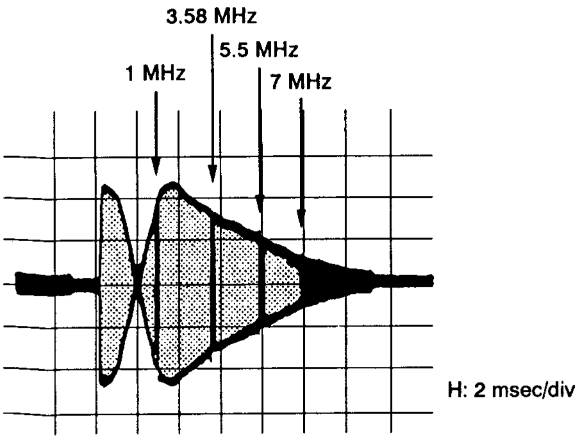


Fig. 9-6.

2. Flying Erase Check (VS-116 board)

Mode	Record
Signal	Arbitrary
Measurement Point	Pin ② of W001 (FE (X))
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: approx. 7.5 MHz Voltage: Above 1.5 Vp-p

Note: Use a MP type tape.

Checking method:

1) Check that the oscillation frequency is approx. 7.5 MHz and that the oscillation voltage is above 1.5 Vp-p.

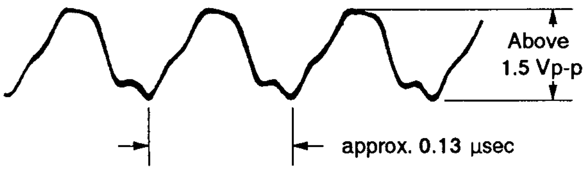


Fig. 9-7.

3. VXO Oscillation Frequency Check (VS-116 board)

Mode	STOP
Signal	Color bar
Measurement Point	Pin ⑫ of IC152
Measuring Instrument	Frequency counter
Specified Value	4433618 ± 70 Hz

Note: Connect the frequency counter via a high impedance (approximately 10 MΩ) and low capacity (below 10 pF) buffer.

Adjusting method:

1) Check that the oscillation frequency of pin ⑫ of IC152 is 4433618 ± 70 Hz.

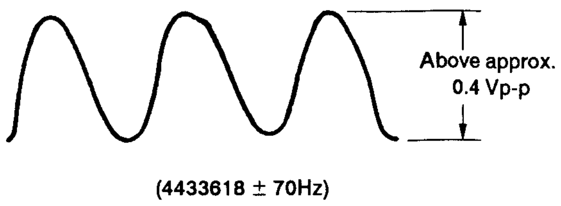


Fig. 9-8.

4. EE Level Adjustment (VS-116 board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ② of CN101 (VIDEO OUT)[Note]
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4A (EE LEVEL)
Specified Value	A=1.00 ± 0.025V

Note: Terminate pin ② of CN101 at 75 Ω.
After completing adjustments, remove the 75 Ω resistor.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

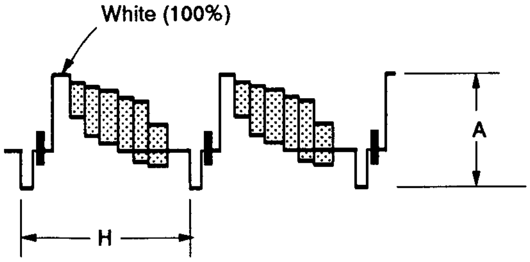


Fig. 9-9.

5. IR Adjustment (VS-116 board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ⑦ of IC151 (Y COMB OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4D (SR IR)
Specified Value	Residual chroma component (A) is minimum (below 80 mVp-p)

Connection

1) Connect pin ⑭ of IC151 (VREF: 3.5 Vdc) or pin ② of IC159 to pin (51) of IC151 with a jumper wire.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4D, and adjust so that the residual chroma component (A) becomes minimum.
3) Press the PAUSE button of the adjusting remote control unit.

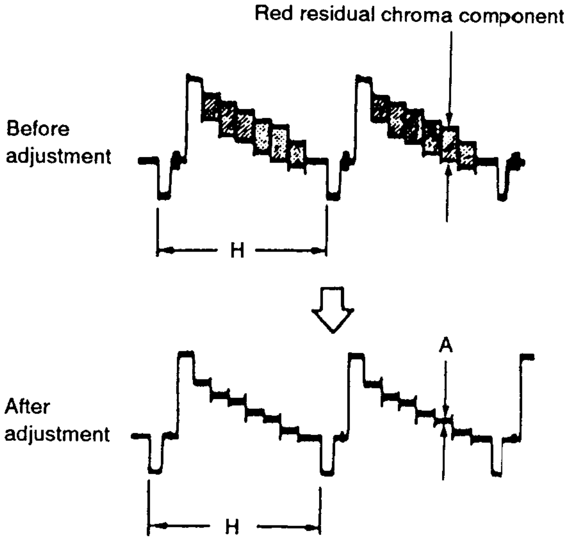


Fig. 9-10.

6. Y/C Separation Adjustment (VS-116 board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ⑪ of IC151 (C+CD)
Adjusting Element	Oscilloscope
Measuring Instrument	RV051 (Phase)
Adjustment Page	D
Adjustment Address	4C (Y/C SEP DL LEVEL)
Specified Value	Residual chroma component (A) is minimum.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4C, and adjust the residual chroma component to minimum.
3) Adjust RV051 so that the residual chroma component (A) becomes minimum.
5) Press the PAUSE button of the adjusting remote control unit.

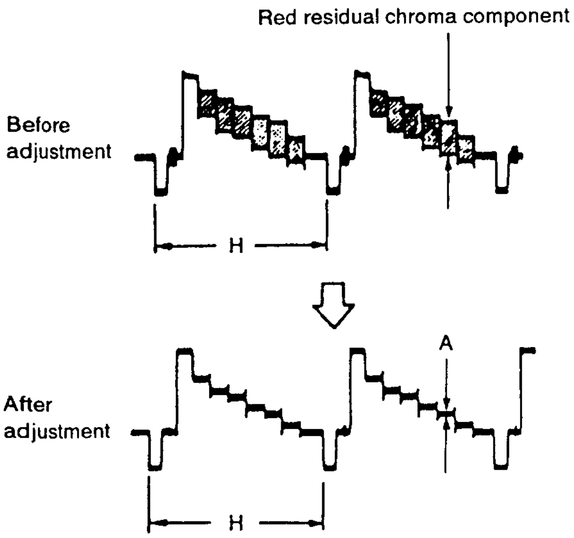


Fig. 9-11.

7. Emphasis Input Level Adjustment (VS-116 board)

Mode	E-E
Signal	Color bar without burst signal
Measurement Point	Pin ③ of IC155 (or Pin ③ of IC151)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5A (EMPHASIS INPUT LEVEL)
Specified Value	A=0.50 ± 0.025V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 5A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

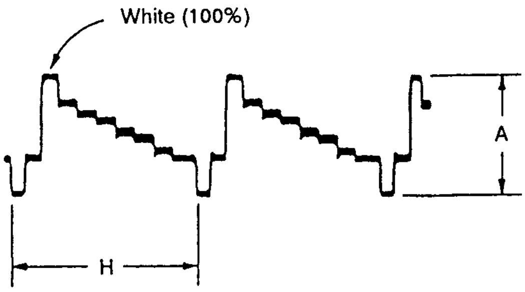


Fig. 9-12.

8. PB Y Level Adjustment (VS-116 board)

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Color bar section
Measurement Point	Pin ㉑ of IC151
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	• Normal mode 59 (NORMAL PB Y LEVEL)
Specified Value	A=0.50 ± 0.025V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Playback the color bar section of the normal mode alignment tape (WR5-5CSP).
3) Change the data of page: D, address: 59, and adjust so that the Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

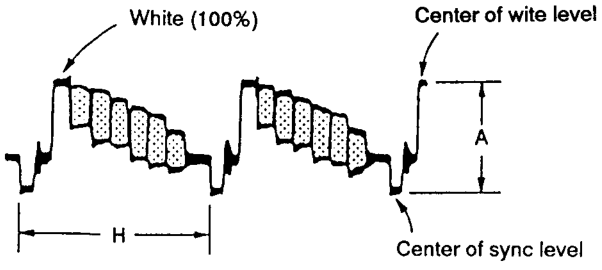


Fig. 9-13.

9. PB LINE OUT Level Adjustment

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Color bar section
Measurement Point	Video output terminal (terminated at 75 Ω)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5B (PB LINE LEVEL)
Specified Value	A=1.0 ± 0.025V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 5B, and adjust so that the video signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

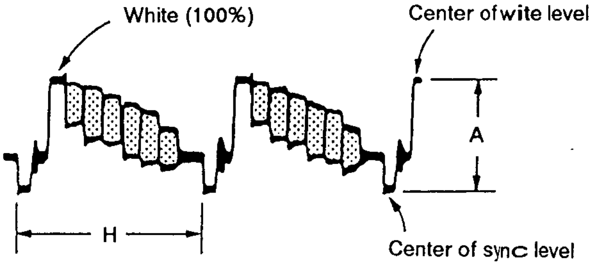


Fig. 9-14.

10. Y FM Carrier Frequency Adjustment (VS-116 board)

Mode	E-E
Signal	No signal
Measurement Point	Pin ⑤ of IC003 (REC Y RF OUT)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	4F (Y FM CARRIER)
Specified Value	4.38 ± 0.04 MHz

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4F, and adjust so that the Y FM carrier frequency becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.
4) Perform "Deviation Adjustment".

Pin ⑤ of IC003 waveform

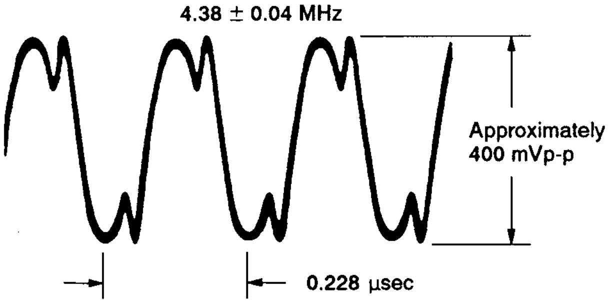


Fig. 9-15.

11. Deviation Adjustment (VS-116 board)

Mode	Record and playback
Signal	Color bar
Measurement Point	Pin ㉑ of IC151
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	51 (Y FM DEVIATION)
Specified Value	A=0.50 ± 0.025V

Note: Check that "Emphasis Input Level Adjustment", "PB Y Level Adjustment" and "Y FM Carrier Frequency Adjustment" have been completed.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Record the color bar signal.
3) Playback the recorded signal.
4) Check the playback signal level (A).
   Specification:A=0.50 ± 0.025V
5) If the specification is not satisfied, change the data of page: D, address: 51, and repeat steps 2) to 4).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

6) Press the PAUSE button of the adjusting remote control unit.

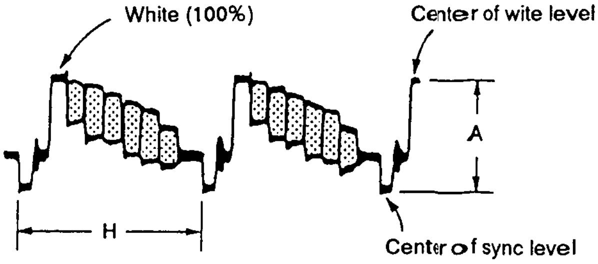


Fig. 9-16.

12. Chroma Emphasis fo Adjustment (VS-116 board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ㉔ of IC152
Measuring Instrument	Oscilloscope
Adjustment Element	FL153
Specified Value	Minimum fo component

Connection:

1) Connect pin ㉔ of IC152 to GND with a 3.3 kΩ resistor (1-249-423-11).

Adjusting method

1) Adjust FL153 so that the amplitude of the latter section of the chroma signal (yellow section) becomes minimum.

Minimize the amplitude of the latter section of the yellow section.

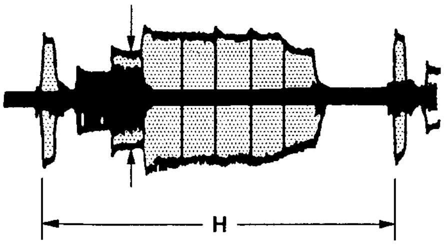


Fig. 9-17.

13. REC Y Level Adjustment (VS-116 board)

Mode	Record (SP)
Signal	No signal
Measurement Point	Pin ⑤ of IC003
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	55 (REC Y LEVEL EE NOR MP) 54 (REC Y LEVEL EE NOR ME)
Specified Value	A=205 ± 5 mVp-p

Note: Use a MP type tape.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 55, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.
4) Set the data of page: D, address: 55 to page: D, address: 54.
5) Press the PAUSE button of the adjusting remote control unit.

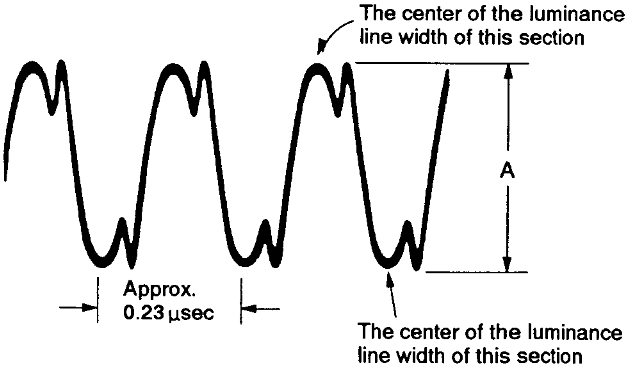

The center of the luminance line width of this section
A
Approx. 0.23 μsec
The center of the luminance line width of this section

Fig. 9-18.

14. REC C Level Adjustment (VS-116 board)

Mode	Record (SP)
Signal	Color bar
Measurement Point	Pin ③ of IC003
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	46 (REC C RF (EE))
Specified Value	A=110 ± 10 mVp-p

Note: Use a MP type tape.

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 46, and adjust so that the REC C level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

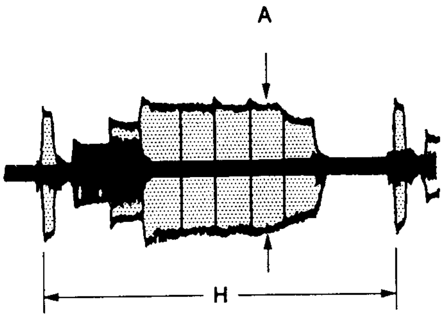


Fig. 9-19.

15. REC ATF Level Check (VS-116 board)

Mode	Record (SP)
Signal	No signal
Measurement Point	Pin ㉔ of IC001 (REC 1CH)
Measuring Instrument	Oscilloscope
Specified Value	A=8 ± 2 mVp-p

Note: Use a MP type tape.

Connection:
1) Remove the AU-171 board CN602.

Checking method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) To reduce the REC Y signal, set data: 00 to page: D, address: 55.
   Note: Don't press the PAUSE button of the adjusting remote control unit.
3) Check that the REC ATF signal level (A) satisfies the specified value.
4) Turn the main power supply (6.3V) off.

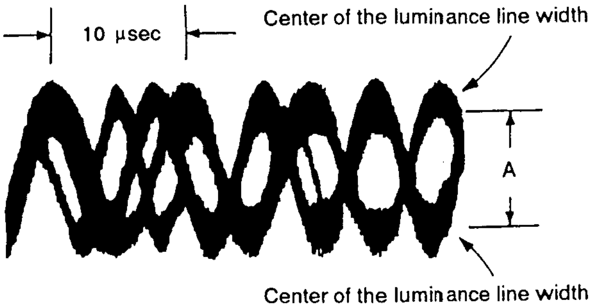


Fig. 9-20.

16. REC AFM Level Check (VS-116 board)

Mode	Record (SP)
Signal	No signal
Measurement Point	Pin ㉔ of IC001 (REC 1CH)
Measuring Instrument	Oscilloscope
Specified Value	A=9 ± 2 mVp-p

Note: Use a MP type tape.

Connection:
1) Connect Pin ⑨ of IC404 and GND with a 0.01 µF capacitor (1-101-004-00).

Checking method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) To reduce the REC Y signal, set data: 00 to page: D, address: 55.
   Note: Don't press the PAUSE button of the adjusting remote control unit.
3) Check that the REC AFM signal level (A) satisfies the specified value.
4) Turn the main power supply (6.3V) off.

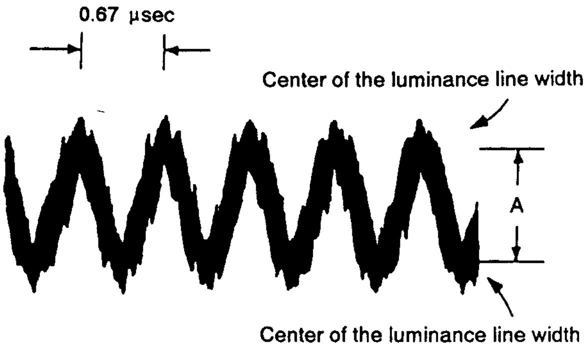


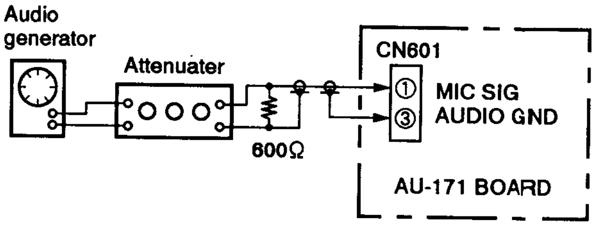
Fig. 9-21.

9-6. AUDIO SYSTEM ADJUSTMENT

- Perform the adjustment using the color bar signal as a video signal input.

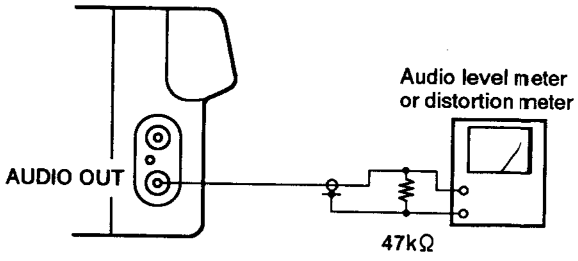
[Connecting the measuring instruments for the audio]
Connect the audio system measuring instruments besides the video system measuring instruments as shown in Fig. 9-22, and perform adjustments with the power switch [player] position.

- Connection of Audio generator and attenuator except for "Overall Level Characteristic, Distortion Check" and "Overall Noise Level Check".
  Note: Remove the MA-206 board.



600Ω : 270 (1-249-410-11) + 330 (1-249-411-11)

- Connection of Audio level meter or distortion meter



47 kΩ : 1-249-437-11

Fig. 9-22.

[Adjustment Procedure]
1) E-E output level check
2) IR adjustment
3) Deviation adjustment
4) Carrier frequency check
5) Record level check
6) Overall level characteristics, distortion check
7) Overall noise level check

1. E-E Output Level Check (AU-171 board)

Mode	Record
Signal	400 Hz, -36.1 dBs, pin ① of CN601
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	-7.5 ± 2 dBs

Checking method:
1) Check that the 400 Hz signal level satisfies the specified value.

2. IR Adjustment (AU-171 board)

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP)
Measurement Point	+: Pin ⑥ of IC601 –: Pin ㊹ of IC601 (C629 ⊕)
Measuring Instrument	Digital voltmeter
Adjustment Page	D
Adjustment Address	7A (1.5 IR)
Specified Value	The DC voltage difference between pins ㊹ and ⑥ is 0 ± 10 mVdc

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 7A and adjust so that the DC voltage becomes 0 ± 10 mVdc.
3) Press the PAUSE button of the adjusting remote control unit.

3. Deviation Adjustment

Mode	Playback
Signal	Alignment tape: For checking the operation (WR5-5CSP)
Measurement Point	Audio output terminal
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	7B (1.5 DEV)
Specified Value	-7.5 ± 0.5 dBs

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 7B, and adjust so that the 400 Hz signal level becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

4. Carrier Frequency Check (AU-171 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ㉛ of CN602 (REC AFM)
Measuring Instrument	Frequency counter (Note 1)
Specified Value	1.500 ± 0.002 MHz

Note: Use a high impedance (above 1 MΩ) and low capacity (below 20 pF) probe.

Checking method:
1) Check that the 1.5 MHz carrier frequency satisfies the specified value.

5. Record Level Check (AU-171 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ㉛ of CN602 (REC AFM)
Measuring Instrument	Oscilloscope
Specified Value	A=48 ± 8 mVp-p

Checking method:
1) Check that the 1.5 MHz carrier level satisfies the specified value.
   (Read the center of the luminance line width and note down the level read.)

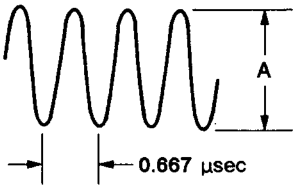
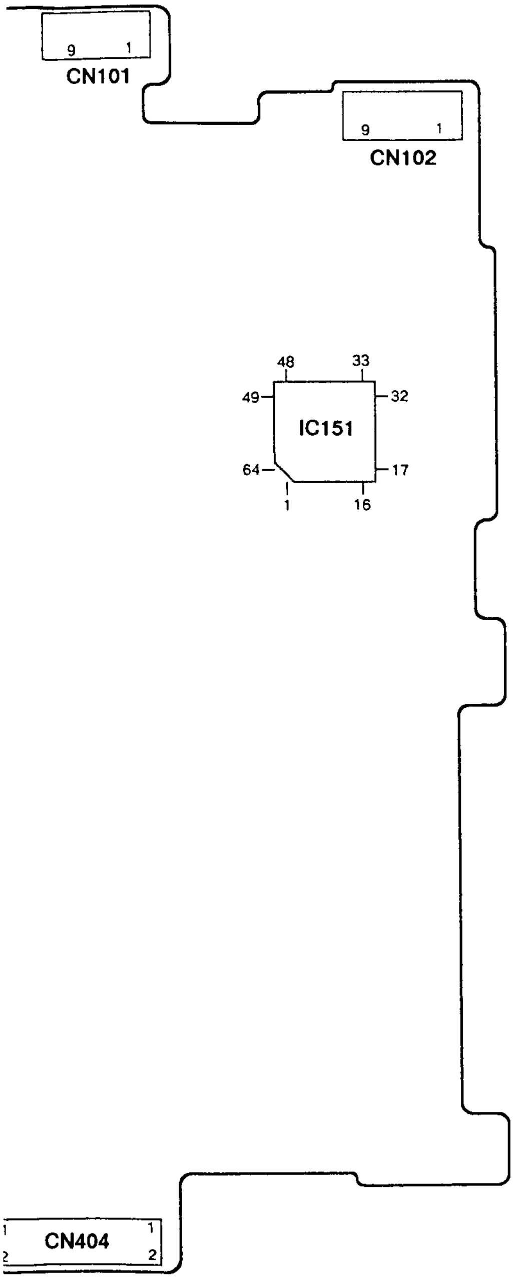
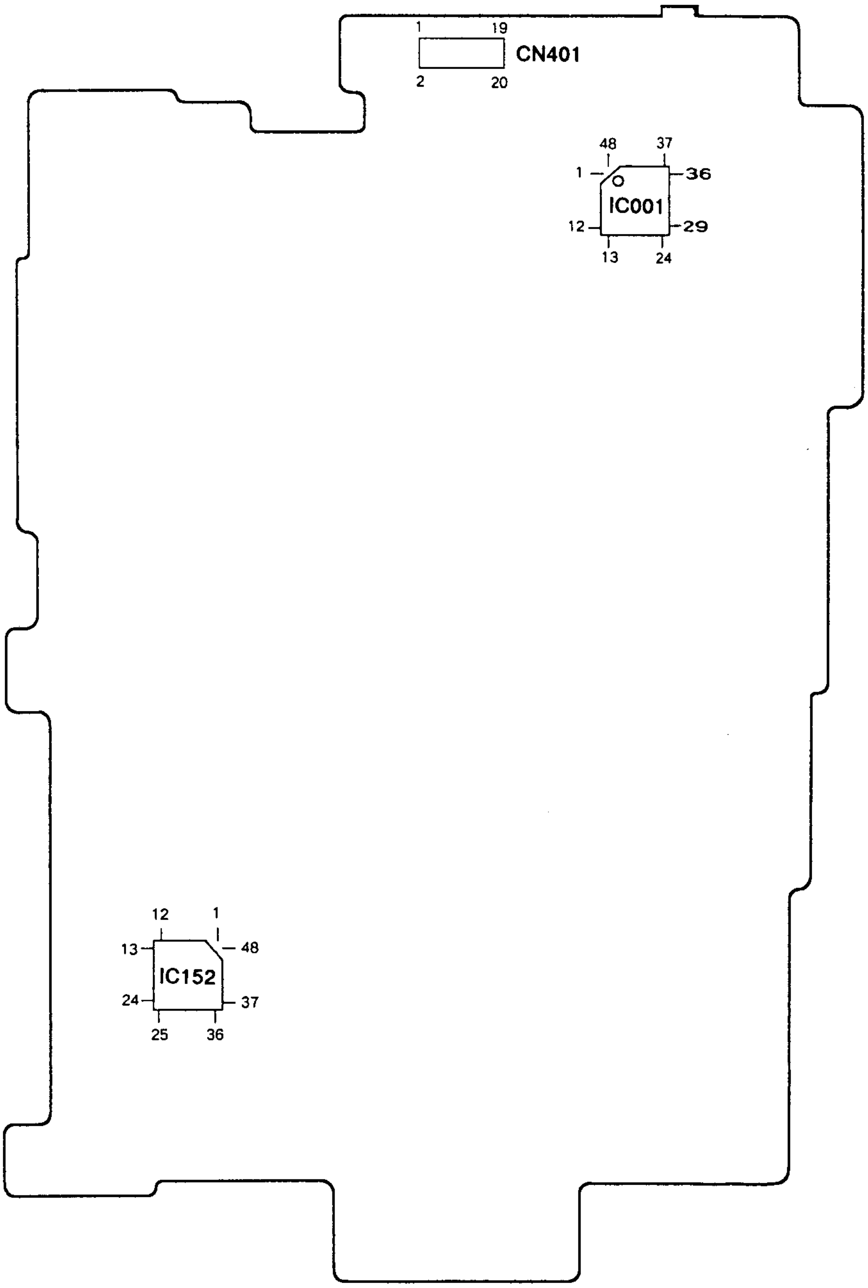


Fig. 9-23.

NT SIDE)


9
1
CN101
9
1
CN102
48
33
49
32
IC151
64
17
1
16
1
2
CN404
1
2

VS-116 BOARD (CONDUCTOR SIDE)


1
19
CN401
2
20
48
37
1
36
IC001
12
29
13
24
12
1
13
48
IC152
24
37
25
36

9-973-556-11

Sony Corporation
Personal Video Group

English
94C097588-1
Printed in Germany
© 1994, 3
Published by CV Quality Engineering DIV.

V03066 2923 122

CCD-TR350E

SONY

SERVICE MANUAL

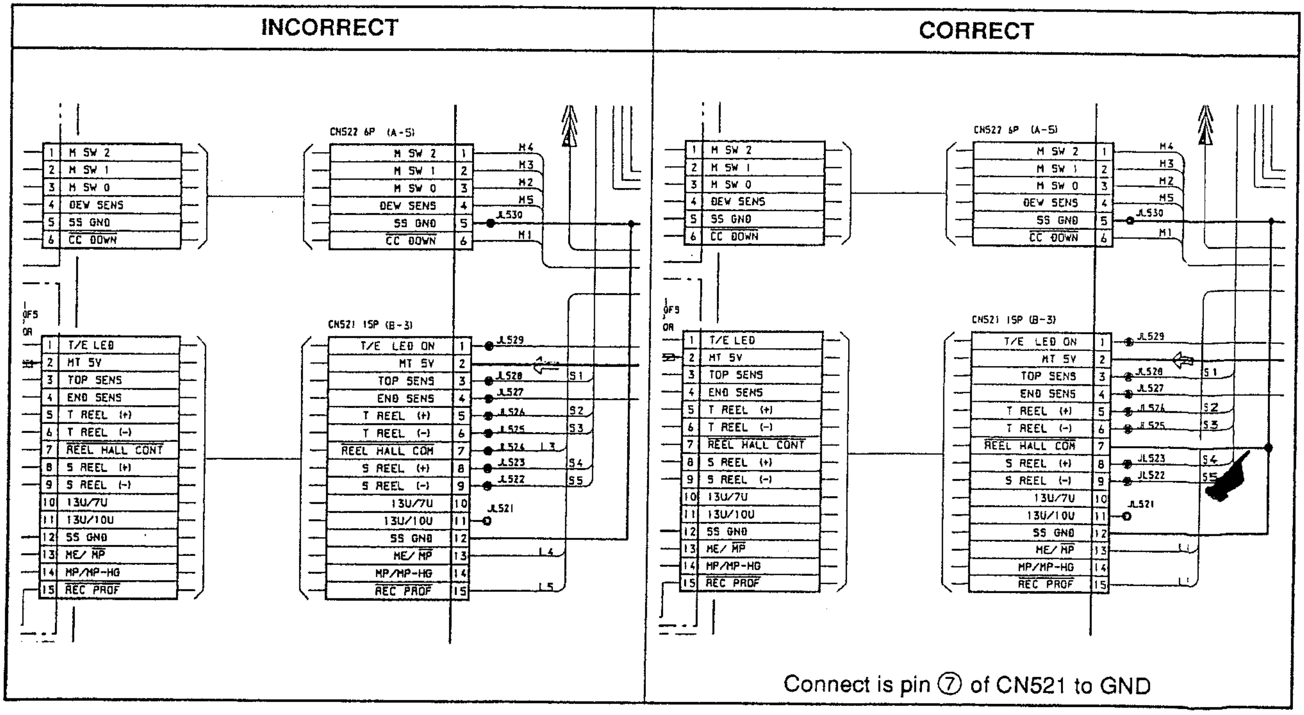
AEP Model
UK Model
E Model
Australian Model
Russian Model
Tourist Model

CORRECTION-1

Please correct your Supplement-1 (9-973-556-81).

☞ : Corrected Portion

SL-44 Board : Page 39


CN522 6P (A-5)
M SW 2
M SW 1
M SW 0
DEW SENS
SS GND
CC DOWN
M4
M3
M2
M5
M1
JL530
CN521 15P (B-3)
T/E LED ON
MT 5V
TOP SENS
END SENS
T REEL (+)
T REEL (-)
REEL HALL COM
S REEL (+)
S REEL (-)
13V/7V
13V/10V
SS GND
ME/ MP
MP/MP-HG
REC PROF
T/E LED
REEL HALL CONT
JL529
JL528
JL527
JL526
JL525
JL524
JL523
JL522
JL521
S1
S2
S3
S4
S5
L3
L4
L5
OFS
OR

INCORRECT | CORRECT

Connect is pin ⑦ of CN521 to GND

Sony Corporation
Consumer A&V Products Company
Personal A&V Products Div.

English
9510985-1
Printed in Japan
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Published by Personal A&V Products Div.
Quality Engineering Dept.

CCD-TR350E

SONY

SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model
Russian Model
Tourist Model

SUPPLEMENT-1

File this Supplement with the Service Manual.

Subject : Board change

- Board have been changed as shown below.

FORMER	NEW
CD-116 Board	CD-124 Board (1-652-587-21)
VC-147 Board	VC-153 Board (1-652-584-21)
VS-116 Board	VS-120 Board (1-652-583-21)
CN-84 Board	CN-88 Board (1-652-590-21)
SL-41 Board	SL-44 Board (1-652-588-21)
AU-171 Board	AU-178 Board (1-652-586-21)
MA-206 Board	MA-218 Board (1-652-589-21)
DD-67 Board	DD-74 Board (1-652-585-21)

Note: As CN-88 board has no change, Schematic Diagram and Printed Wiring Board are omitted.

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Section Title Page

2. DISASSEMBLY

2-15. Circuit Boards Location ············ 2

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

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- VC-153 Board (Camera, Lens Drive) ············ 7
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- VC-153 Board (Lens Drive) ············ 18
- VS-120 Board (REC/PB Head Amplifier, Video, Servo, System Control) ············ 21
- VS-120 Board (REC/PB Head Amplifier) ············ 25
- VS-120 Board (Video) ············ 29
- VS-120 Board (Servo, System Control) ············ 33
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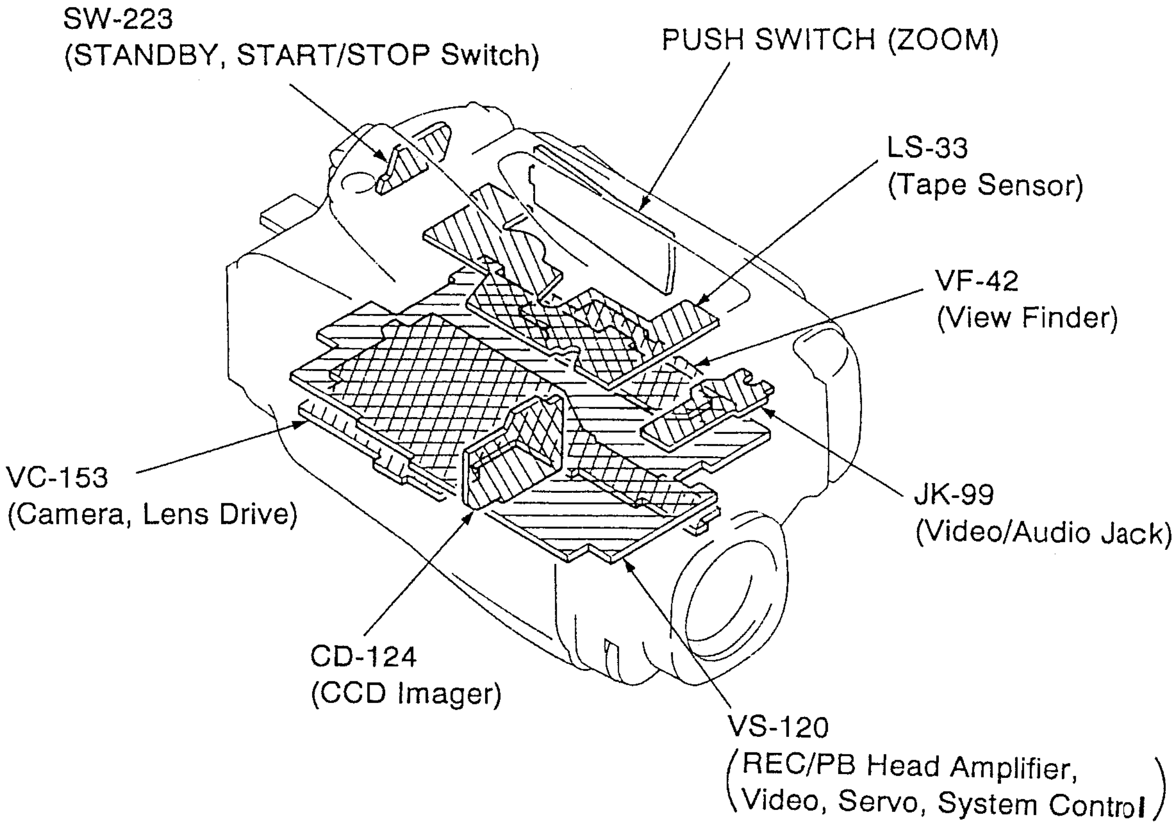
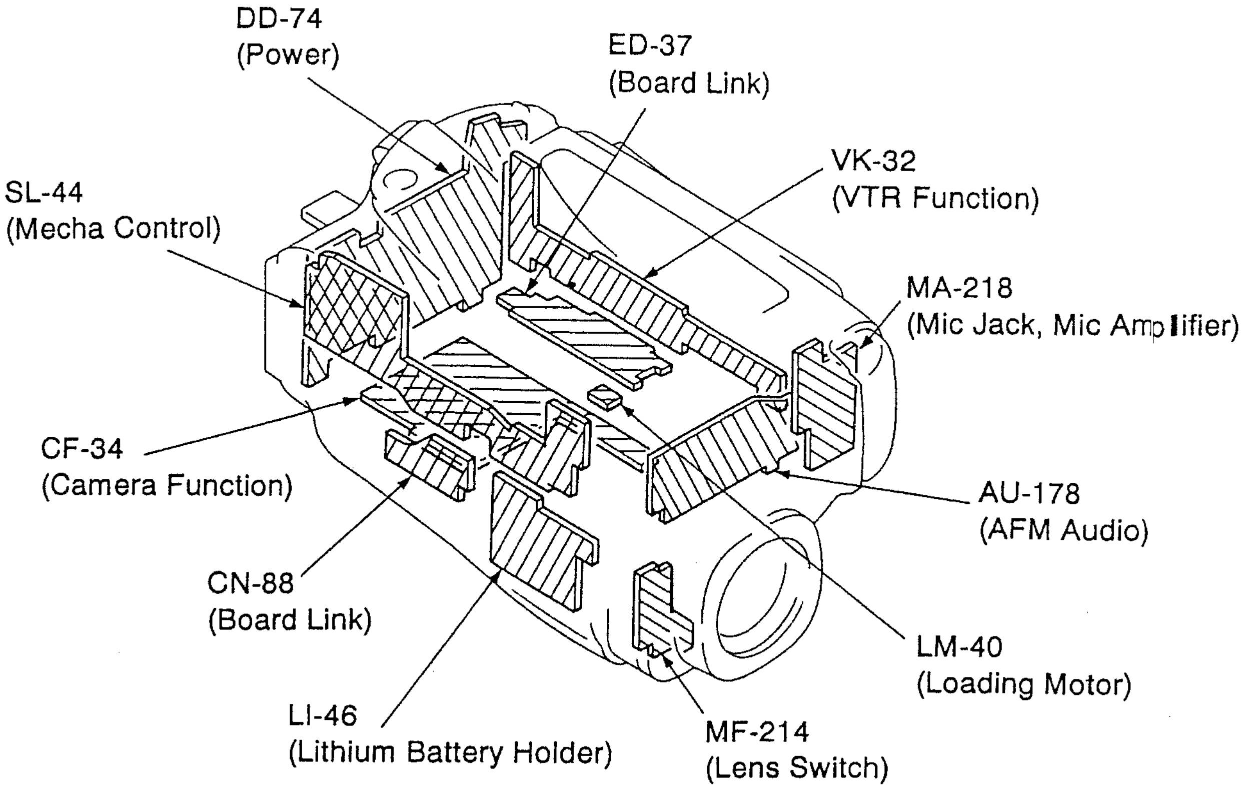
V03066

SECTION 2
DISASSEMBLY

2-15. CIRCUIT BOARDS LOCATION


SW-223
(STANDBY, START/STOP Switch)
PUSH SWITCH (ZOOM)
LS-33
(Tape Sensor)
VF-42
(View Finder)
VC-153
(Camera, Lens Drive)
JK-99
(Video/Audio Jack)
CD-124
(CCD Imager)
VS-120
(REC/PB Head Amplifier, Video, Servo, System Control)

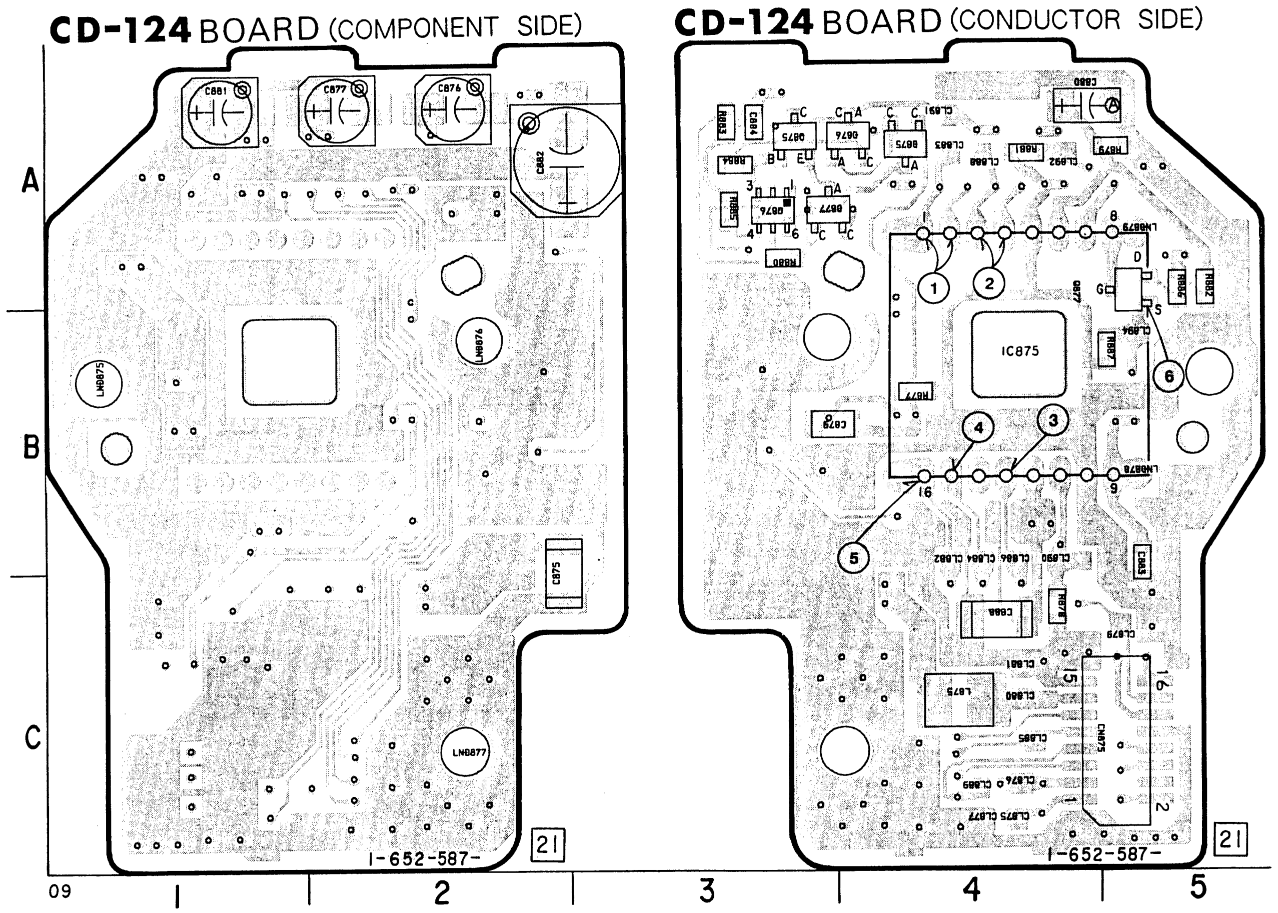

DD-74
(Power)
ED-37
(Board Link)
SL-44
(Mecha Control)
VK-32
(VTR Function)
MA-218
(Mic Jack, Mic Amplifier)
CF-34
(Camera Function)
AU-178
(AFM Audio)
CN-88
(Board Link)
LM-40
(Loading Motor)
LI-46
(Lithium Battery Holder)
MF-214
(Lens Switch)

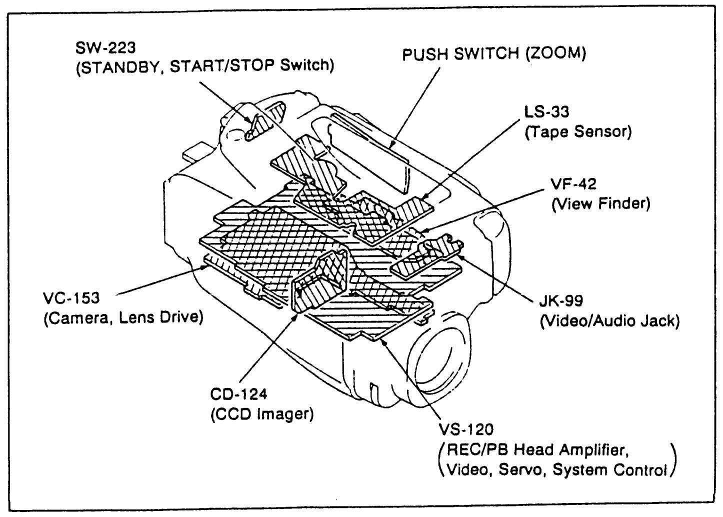
SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

CD-124 (CCD IMAGER) PRINTED WIRING BOARD

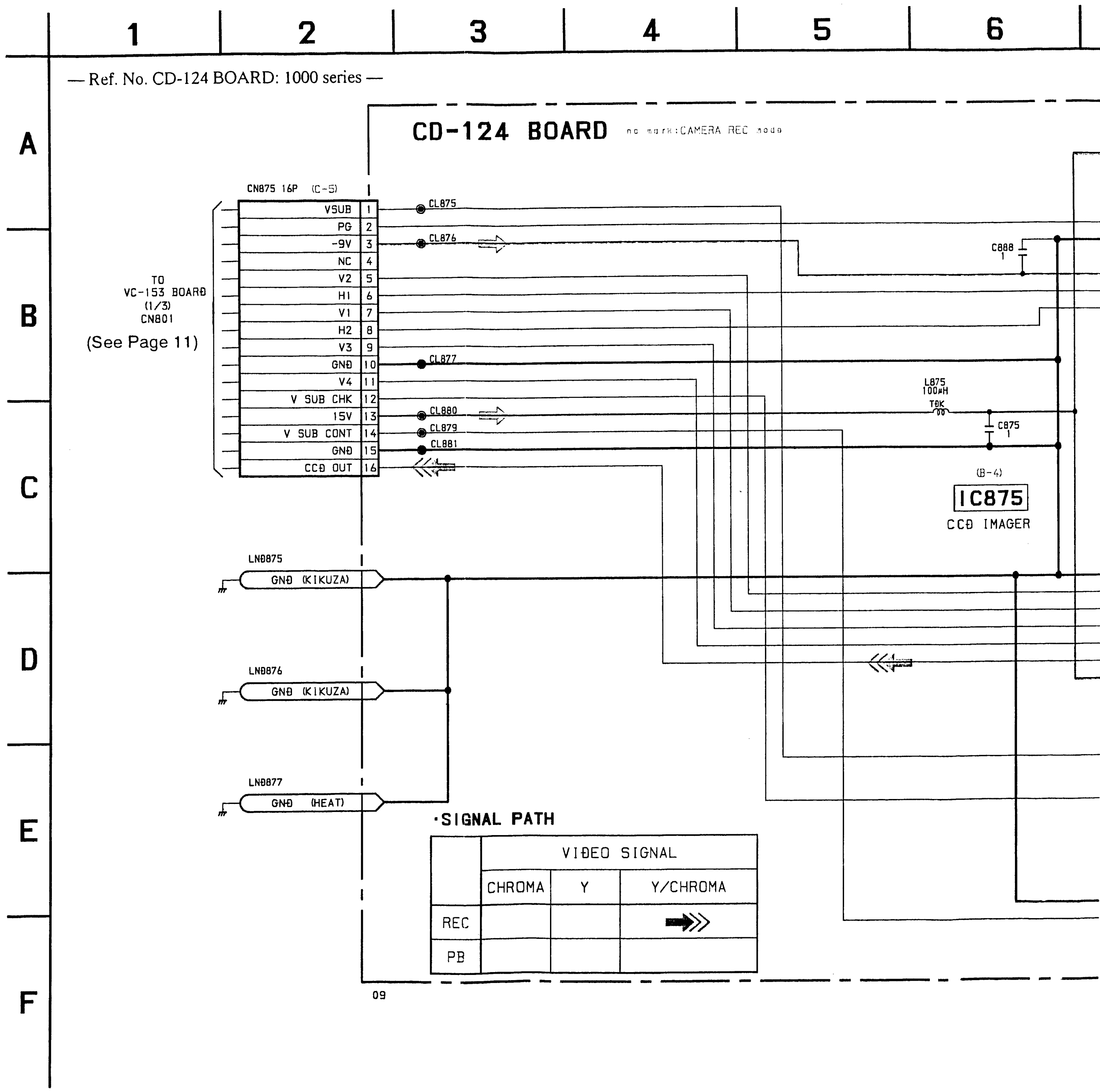
— Ref. No. CD-124 BOARD: 1000 series —


CD-124 BOARD (COMPONENT SIDE)
CD-124 BOARD (CONDUCTOR SIDE)
A
B
C
IC875
LN0875
LN0876
LN0877
C875
C881
C877
C874
C882
1-652-587-
21
09
1
2
3
4
5


SW-223
(STANDBY, START/STOP Switch)
PUSH SWITCH (ZOOM)
LS-33
(Tape Sensor)
VF-42
(View Finder)
VC-153
(Camera, Lens Drive)
JK-99
(Video/Audio Jack)
CD-124
(CCD Imager)
VS-120
(REC/PB Head Amplifier,
Video, Servo, System Control)

CD-124 (CCD IMAGER) SCHEMATIC DIAGRAM

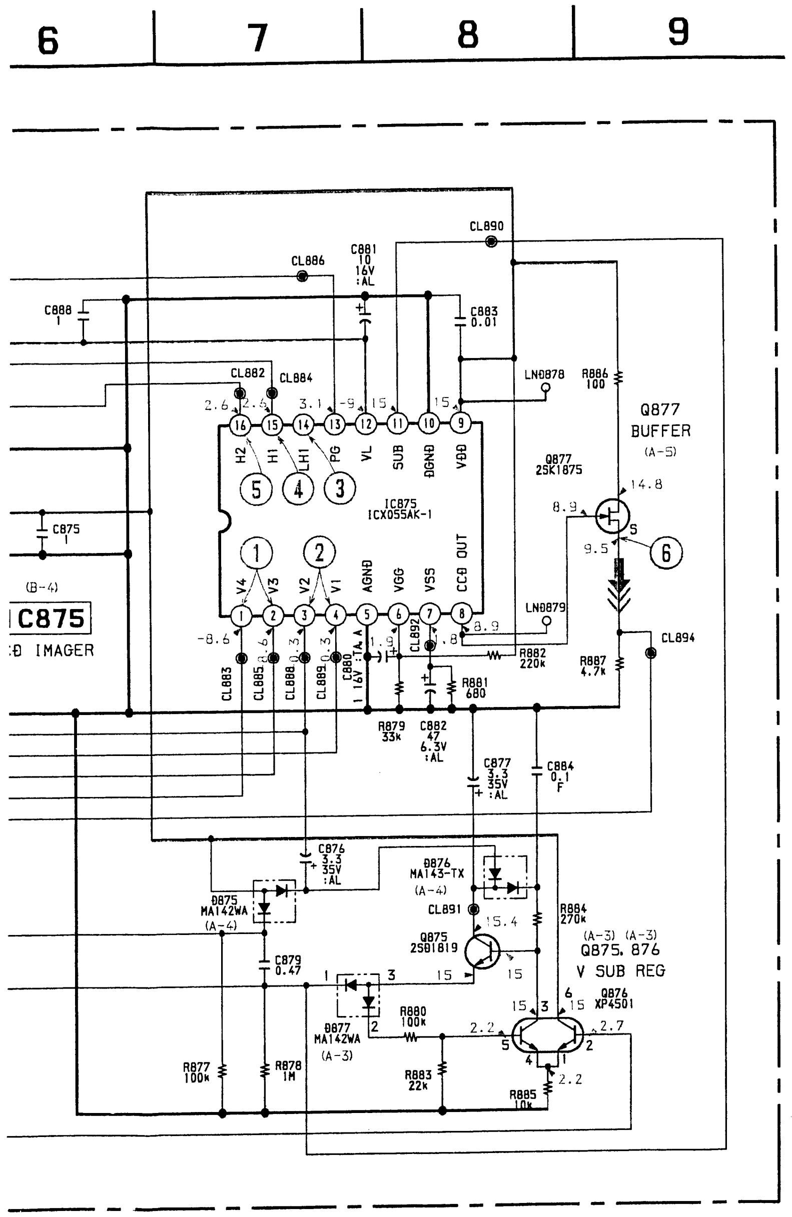
( ): The pages above correspond to CCD-TR350E SUPP


1
2
3
4
5
6
A
B
C
D
E
F
— Ref. No. CD-124 BOARD: 1000 series —
CD-124 BOARD
no mark: CAMERA REC mode
CN875 16P (C-5)
VSUB 1
PG 2
-9V 3
NC 4
V2 5
H1 6
V1 7
H2 8
V3 9
GND 10
V4 11
V SUB CHK 12
15V 13
V SUB CONT 14
GND 15
CCD OUT 16
TO
VC-153 BOARD
(1/3)
CN801
(See Page 11)
CL875
CL876
CL877
CL880
CL879
CL881
C888
1
L875
100μH
TDK
C875
1
(B-4)
IC875
CCD IMAGER
LN0875
GND (KIKUZA)
LN0876
GND (KIKUZA)
LN0877
GND (HEAT)
·SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB
09

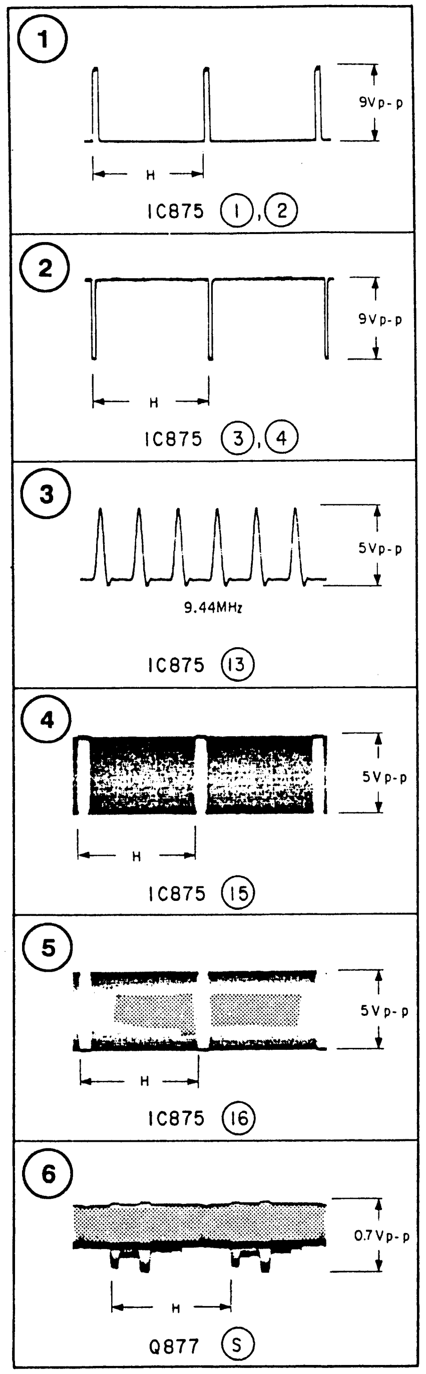
Note on the CCD Imager replacement

- Some of this units require the correction data by the CCD imager (IC875 on CD-124 board), some do not.
  The correction data is input in F page and addresses 1D to 2C of the camera micro processor (IC709 on VC-153 board), and also written on the CCD data label put on the shield case (upper) of the DD-74 board.
  The correction data is not required for the CCD imager supplied for repair. Therefore, when replacing the CCD imager to which the CCD data label is put, remove the CCD data label and input 00 to F page and addresses 1D to 2C of the camera micro processor. Refer to the camera adjustment for input method.

-TR350E SUPPLEMENT-1.


6
7
8
9
IC875
ICX055AK-1
CCD IMAGER
Q877
BUFFER
(A-5)
Q877
2SK1875
Q875
2SB1819
Q876
XP4501
Q875, 876
V SUB REG
D874
MA143-TX
D875
MA142WA
D877
MA142WA
H2
H1
LH1
PG
VL
SUB
DGND
VDD
V4
V3
V2
V1
AGND
VGG
VSS
CCD OUT
CL886
CL890
CL882
CL884
CL891
CL894
LN0878
LN0879
C888
C875
C881
C883
C876
C877
C879
C882
C884
C880
R877
R878
R879
R880
R881
R882
R883
R884
R885
R886
R887
14.8
8.9
9.5
15.4
15
2.2
2.7
-8.6

CD-124 BOARD



by the CCD

sses 1D to 2C
3 board), and
e shield case

CCD imager
ng the CCD
iove the CCD
; 1D to 2C of
ra adjustment

- The CCD imager is not mounted for the already mounted CD-124 board supplied as the repair parts.
  When replacing the CD-124 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- —— : indicated a lead wire mounted on the conductor side.
- ■ : Parts mounted on the conductor side.
- ▨ : Pattern from the side which enables seeing.
  (The other layers'patterns are not indicated.)
- Circled numbers refer to waveforms.
- ○ or ● : Through hole.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

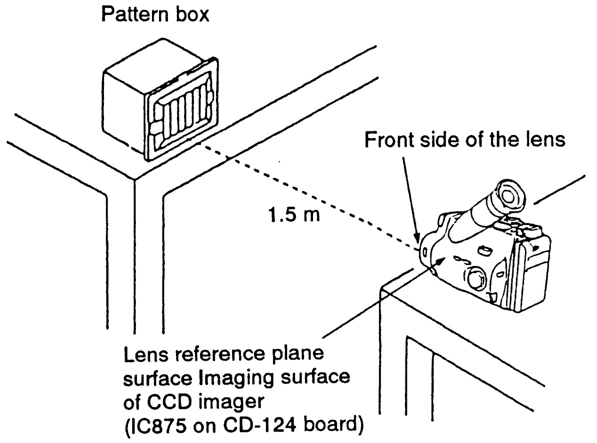
- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W or less unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μ μF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊡ : nonflammable resistor.
- ▭ : fusible resistor.
- □ : panel designation.
- △ : internal component.
- □ : adjustment for repeair.
- —— : B+ Line.
- - - - : B– Line.
- ➯ : IN/OUT direction of (+, –) B LINE.
- Circled numbers refer to waveforms.

Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- **Measuring conditions voltage value and waveform. (CAMERA REC mode)**
- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

1. Connection


Pattern box
Front side of the lens
1.5 m
Lens reference plane
surface Imaging surface
of CCD imager
(IC875 on CD-124 board)

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

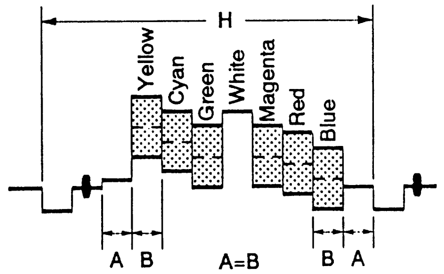

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A
B
A=B
B
A

Fig. a (Video output terminal output waveform)

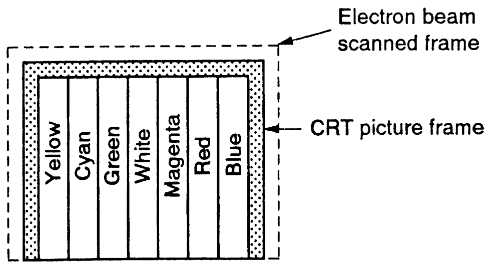

Electron beam
scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. b (Picture on monitor TV)

(REC/PB mode)

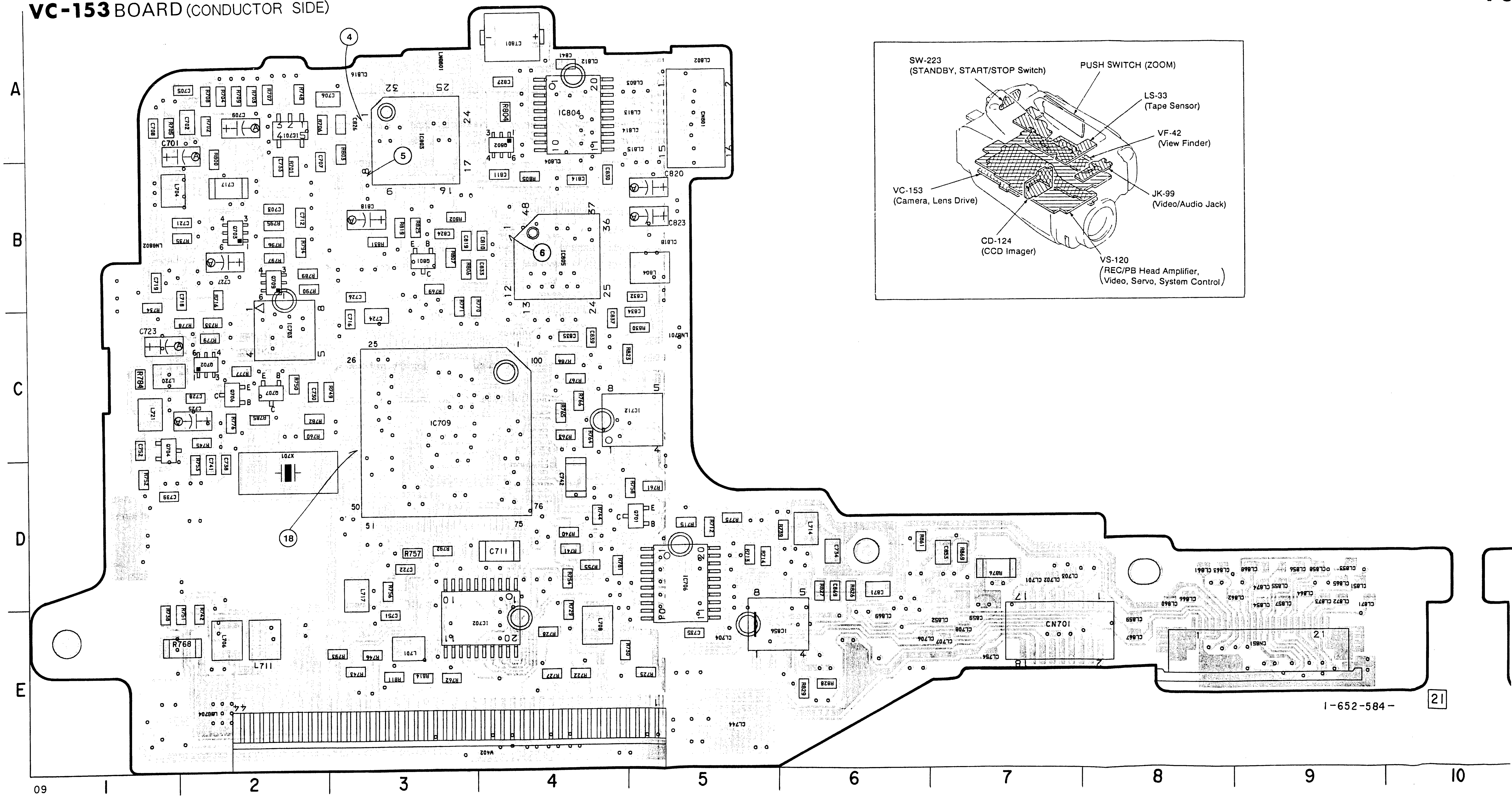
- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

Note: Refer to "9-1-3. How to set the REC Mode" in VIDEO SECTION ADJUSTMENT. (See Page 205 of SERVICE MANUAL (Original).)

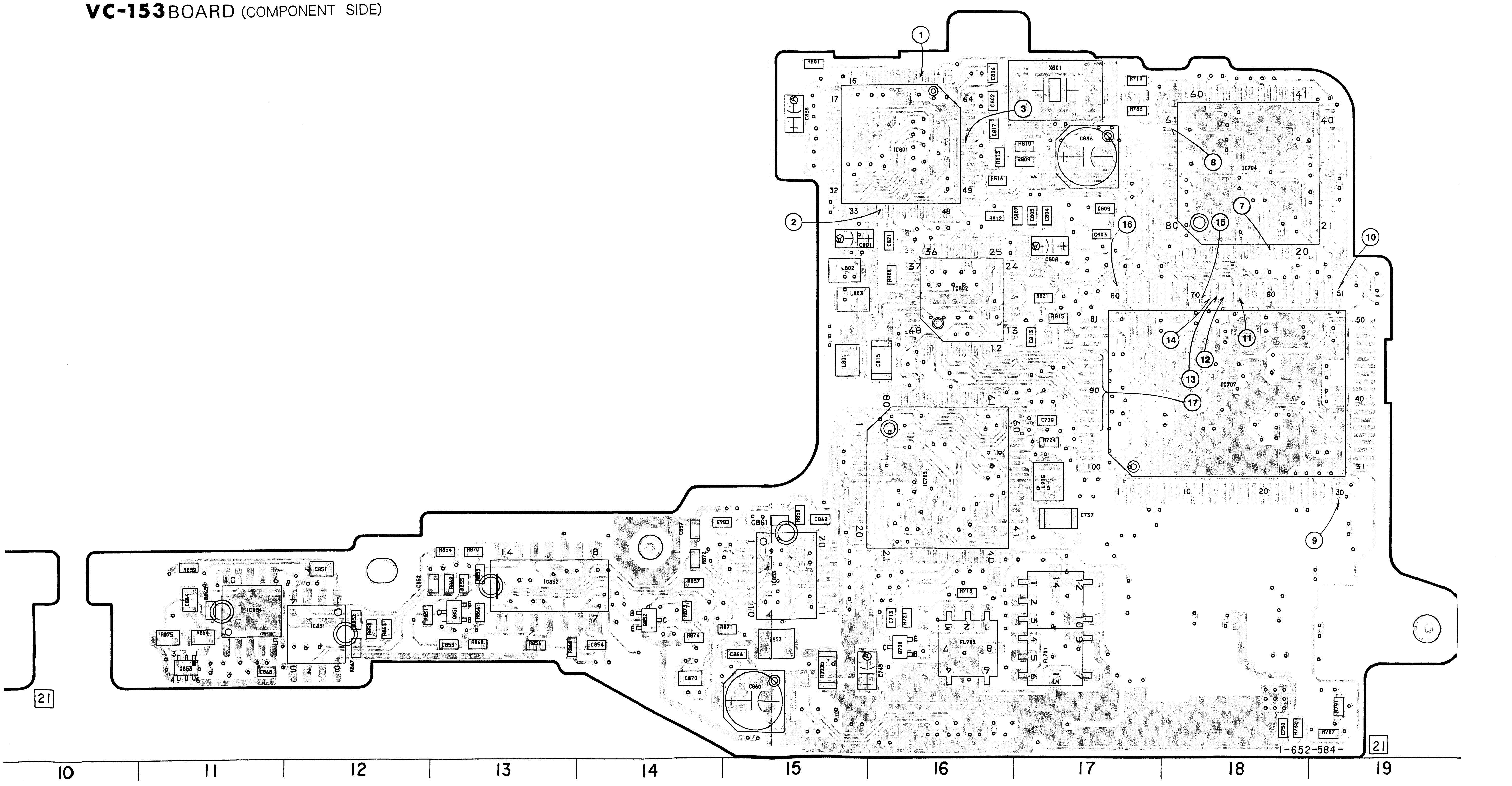
VC-153 (CAMERA, LENS DRIVE) PRINTED WIRING BOARD

— Ref. No. VC-153 BOARD: 3000 series —

VC-153 BOARD (CONDUCTOR SIDE)

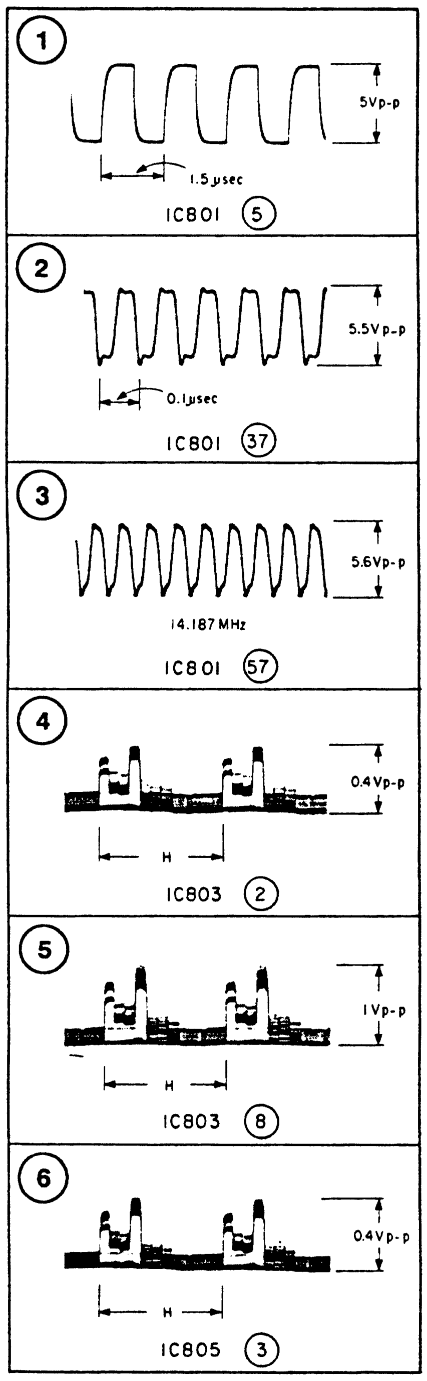

A
B
C
D
E
09
1
2
3
4
5
6
7
8
9
10
IC804
IC803
IC805
IC709
IC703
IC712
IC702
IC706
IC856
IC701
CN701
CN801
CN851
CT801
X701
C701
C711
C723
C820
C823
R757
R768
L711
④
⑤
⑥
⑱
1-652-584-
21
SW-223
(STANDBY, START/STOP Switch)
PUSH SWITCH (ZOOM)
LS-33
(Tape Sensor)
VF-42
(View Finder)
VC-153
(Camera, Lens Drive)
JK-99
(Video/Audio Jack)
CD-124
(CCD Imager)
VS-120
(REC/PB Head Amplifier,
Video, Servo, System Control)

VC-153 BOARD (COMPONENT SIDE)



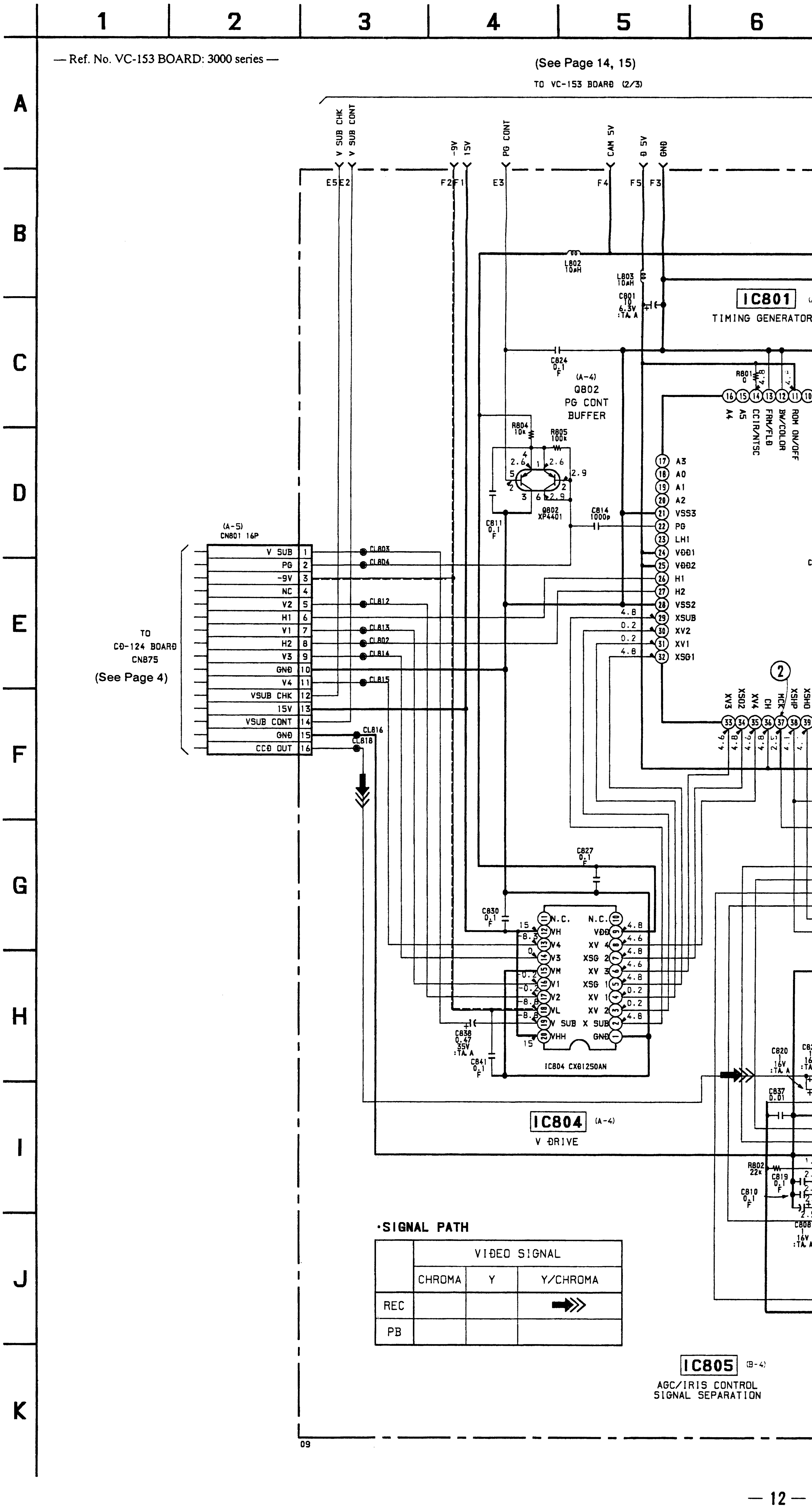
IC801
IC802
IC704
IC707
IC705
IC852
IC853
IC854
IC851
X801
C836
C860
C861
FL702
FL701
Q851
Q852
Q853
Q708
L801
L802
L803
L853
C737
C815
1-652-584-
21
①
②
③
⑦
⑧
⑨
⑩
⑪
⑫
⑬
⑭
⑮
⑯
⑰
10
11
12
13
14
15
16
17
18
19

VC-153 BOARD (1/3)



VC-153 (CAMERA) SCHEMATIC DIAGRAM ( ): The pages above correspond to CCD-TR350E SUPPLEMENT-

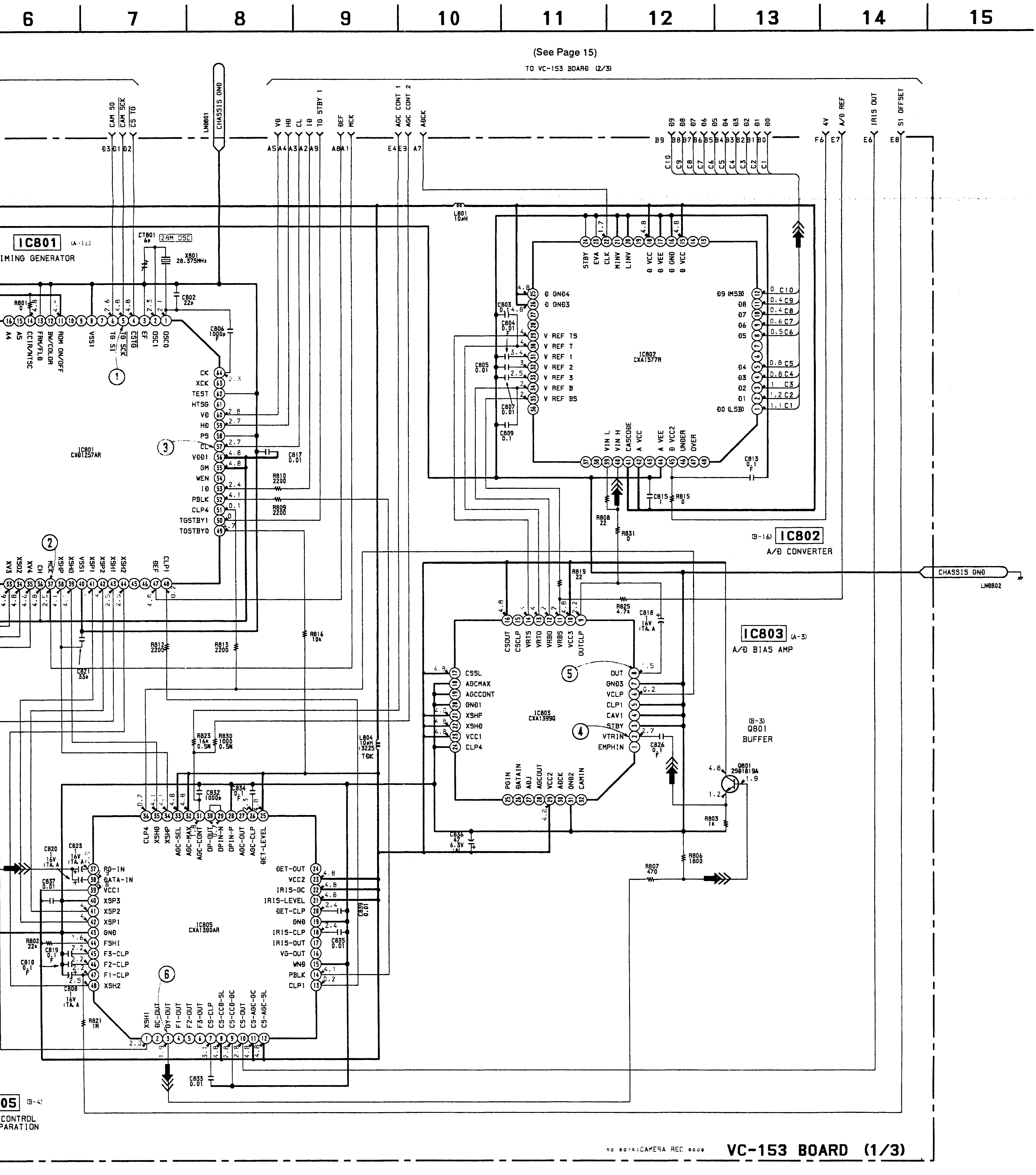
— Ref. No. VC-153 BOARD: 3000 series —


1
2
3
4
5
6
A
B
C
D
E
F
G
H
I
J
K
(See Page 14, 15)
TO VC-153 BOARD (2/3)
V SUB CHK
V SUB CONT
-9V
15V
PG CONT
CAM 5V
D 5V
GND
E5 E2
F2 F1
E3
F4
F5 F3
L802 10μH
L803 10μH
C801 10 6.3V :TA A
IC801
TIMING GENERATOR
C824 0.1 F
(A-4)
Q802
PG CONT
BUFFER
R804 10k
R805 100k
Q802 XP4401
C811 0.1 F
C814 1000p
R801 0
A4
A5
CCIR/NTSC
FRM/FLD
BW/COLOR
ROM ON/OFF
A3
A0
A1
A2
VSS3
PG
LH1
VDD1
VDD2
H1
H2
VSS2
XSUB
XV2
XV1
XSG1
XV3
XSG2
XV4
CH
MCK
XSHP
XSHD
(A-5)
CN801 16P
V SUB
PG
-9V
NC
V2
H1
V1
H2
V3
GND
V4
VSUB CHK
15V
VSUB CONT
GND
CCD OUT
CL803
CL804
CL812
CL813
CL802
CL814
CL815
CL816
CL818
TO
CD-124 BOARD
CN875
(See Page 4)
C827 0.1 F
C830 0.1 F
N.C.
VH
V4
V3
VM
V1
V2
VL
V SUB
VHH
VDD
XV
XSG
X SUB
GND
C838 0.47 35V :TA A
C841 0.1 F
IC804 CXD1250AN
IC804 (A-4)
V DRIVE
C820 16V :TA A
C837 0.01
R802 22k
C819 0.1 F
C810 0.1 F
C808 16V :TA A
IC805 (B-4)
AGC/IRIS CONTROL
SIGNAL SEPARATION
09

·SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡»
PB			

SUPPLEMENT-1.


6
7
8
9
10
11
12
13
14
15
(See Page 15)
TO VC-153 BOARD (2/3)
CHASSIS GND
LND801
CAM SO
CAM SCK
CS TG
VD
HD
CL
ID
TG STBY 1
DEF
MCK
AGC CONT 1
AGC CONT 2
ADCK
D9
D8
D7
D6
D5
D4
D3
D2
D1
D0
4V
A/D REF
IRIS OUT
S1 OFFSET
IC801
TIMING GENERATOR
IC801
CXD1257AR
CT801 6P
28M OSC
X801 28.375MHz
L801 10μH
IC802
CXA1577R
IC802
A/D CONVERTER
IC803
CXA1399Q
IC803
A/D BIAS AMP
Q801
BUFFER
Q801
2SB1819A
IC805
CXA1390AR
IC805
CONTROL
SEPARATION
L804 10μH
CHASSIS GND
LND802
no mark: CAMERA REC mode
VC-153 BOARD (1/3)

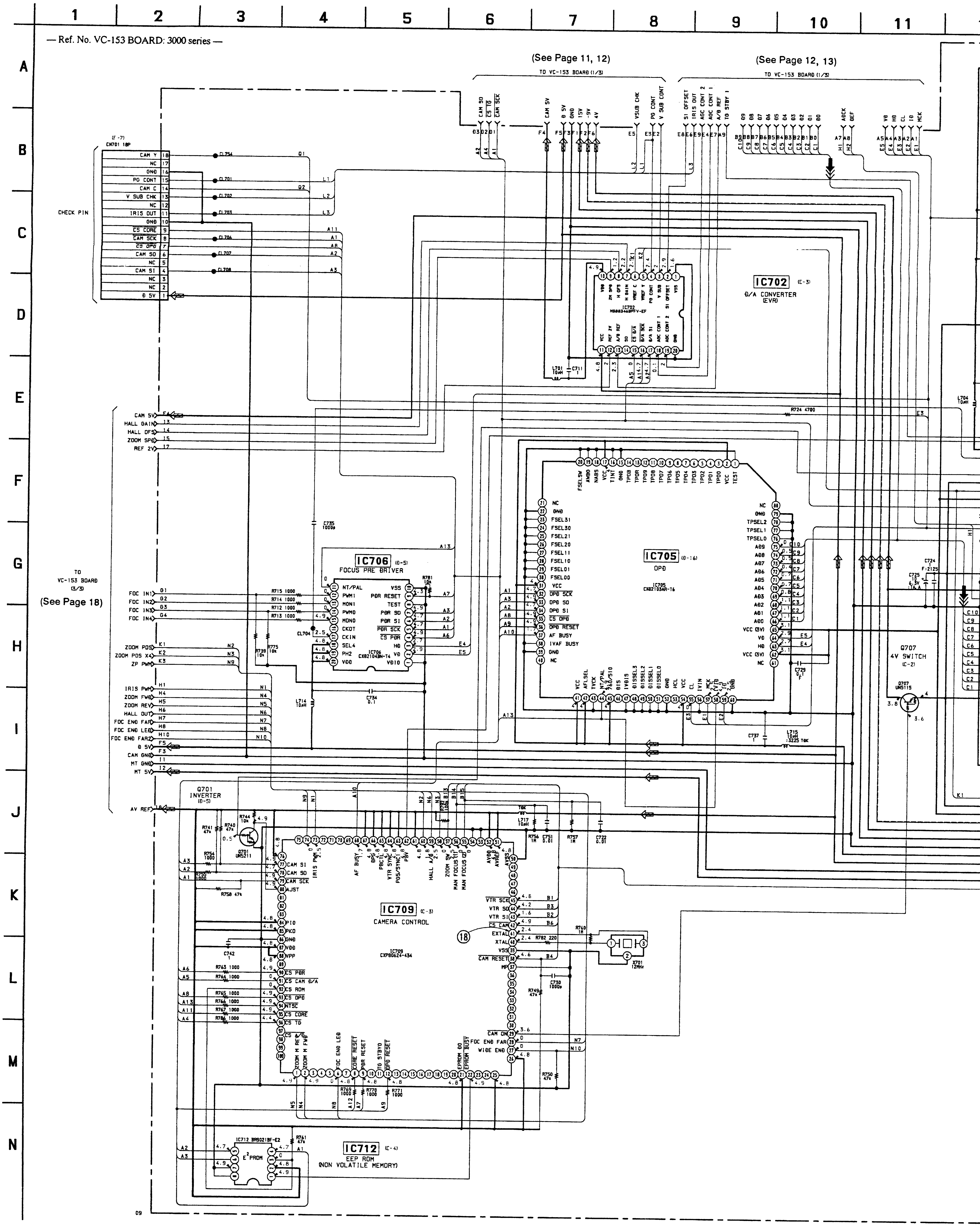
CAME

VC-153 (CAMERA) SCHEMATIC DIAGRAM

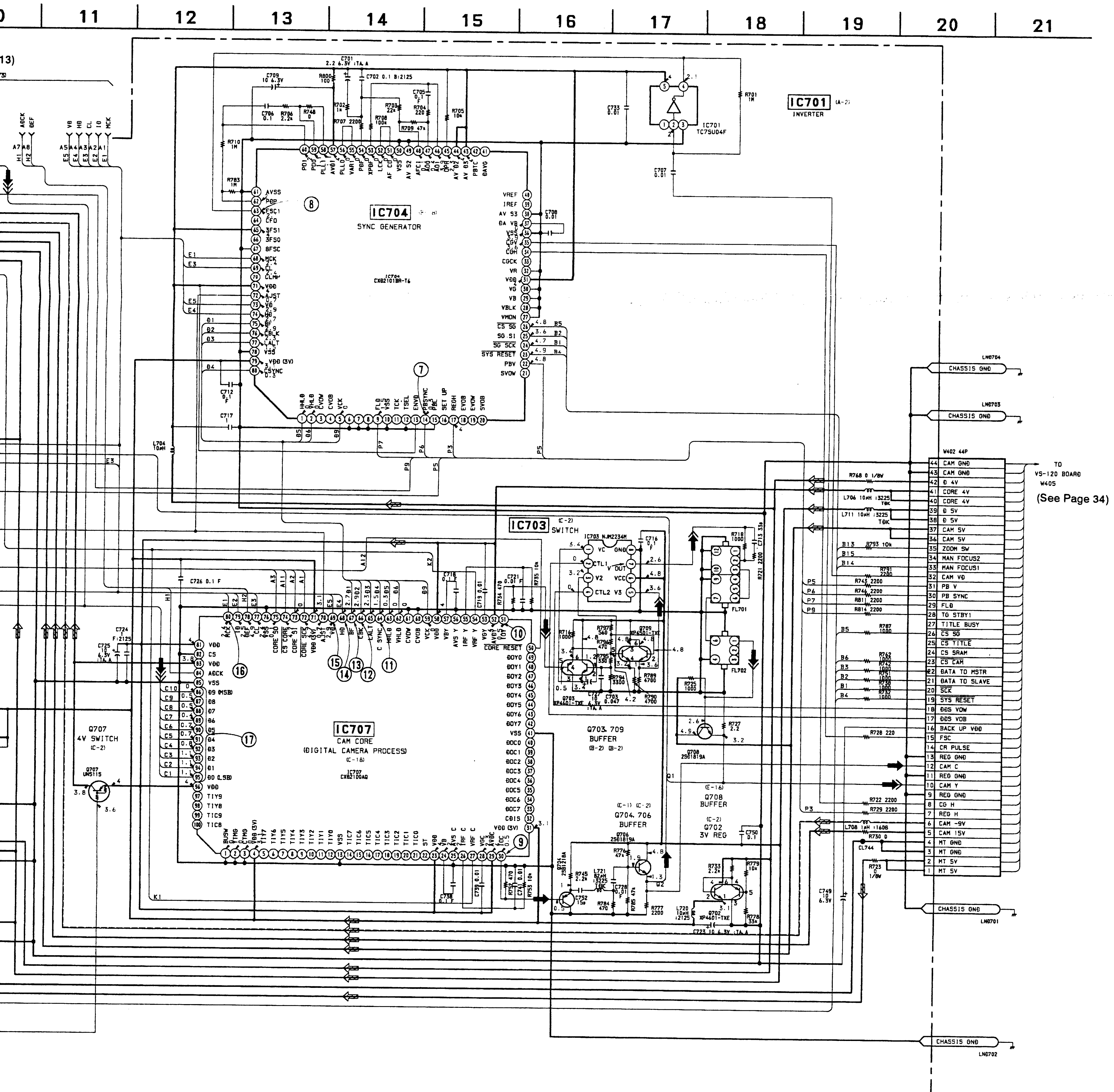
• Refer to page 7 for Printed Wiring Board.

( ): The pages above correspond to CCD-TR350E SUPPLEMENT-1.

— Ref. No. VC-153 BOARD: 3000 series —


(See Page 11, 12)
TO VC-153 BOARD (1/3)
(See Page 12, 13)
TO VC-153 BOARD (1/3)
CN701 18P
CHECK PIN
CAM Y
PG CONT
CAM C
V SUB CHK
IRIS OUT
CS CORE
CAM SCK
CS OPD
CAM SO
CAM SI
B 5V
IC702
D/A CONVERTER (EVR)
IC702 MB88346BPFV-EF
IC705
OPD
IC705 CXD2103AR-T6
IC706
FOCUS PRE DRIVER
IC706 CXD2104BN-T4
TO VC-153 BOARD (3/3)
(See Page 18)
FOC IN1
FOC IN2
FOC IN3
FOC IN4
ZOOM POS
ZOOM POS X4
ZP PWM
IRIS PWM
ZOOM FWD
ZOOM REV
HALL OUT
FOC END FAR
FOC END LED
FOC END FAR2
B 5V
CAM GND
MT GND
MT 5V
AV REF
CAM 5V
HALL GAIN
HALL OFS
ZOOM SPD
REF 2V
Q701
INVERTER
Q701 UN5211
IC709
CAMERA CONTROL
IC709 CXP80624-434
X701 12MHz
Q707
4V SWITCH
Q707 UN5115
IC712
EEP ROM
(NON VOLATILE MEMORY)
IC712 BR9021BF-E2
E²PROM
A
B
C
D
E
F
G
H
I
J
K
L
M
N
1
2
3
4
5
6
7
8
9
10
11

E SUPPLEMENT-1.



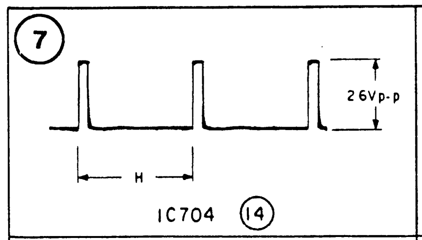
11
12
13
14
15
16
17
18
19
20
21
IC701 INVERTER
IC701 TC7SU04F
IC704 SYNC GENERATOR
IC704 CXD2101BR-T6
IC703 SWITCH
IC703 NJM2234M
IC707 CAM CORE (DIGITAL CAMERA PROCESS)
IC707 CXD2100AQ
Q707 4V SWITCH
Q707 UN5115
Q703, 709 BUFFER
Q704, 706 BUFFER
Q708 BUFFER
Q702 3V REG
FL701
FL702
CHASSIS GND
LN0704
LN0703
LN0701
LN0702
W402 44P
TO VS-120 BOARD W405
(See Page 34)
44 CAM GND
43 CAM GND
42 D 4V
41 CORE 4V
40 CORE 4V
39 D 5V
38 D 5V
37 CAM 5V
36 CAM 5V
35 ZOOM SW
34 MAN FOCUS2
33 MAN FOCUS1
32 CAM VD
31 PB V
30 PB SYNC
29 FLD
28 TO STBY1
27 TITLE BUSY
26 CS SG
25 CS TITLE
24 CS SRAM
23 CS CAM
22 DATA TO MSTR
21 DATA TO SLAVE
20 SCK
19 SYS RESET
18 DDS VDW
17 DDS VDB
16 BACK UP VDD
15 FSC
14 CR PULSE
13 REG GND
12 CAM C
11 REG GND
10 CAM Y
9 REG GND
8 CG H
7 REG H
6 CAM -9V
5 CAM 15V
4 MT GND
3 MT GND
2 MT 5V
1 MT 5V

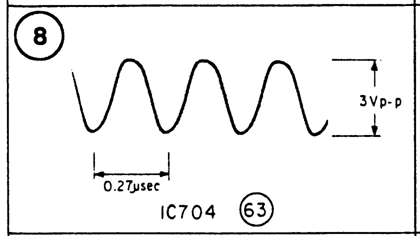
·SIGNAL PATH

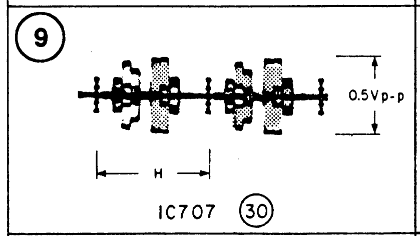
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡⫽	➡⫽⫽
PB			

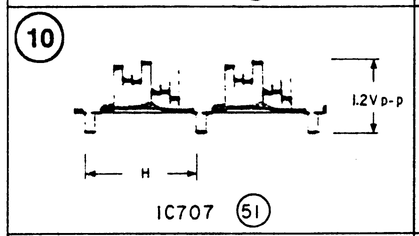
no mark: CAMERA REC mode **VC-153 BOARD (2/3)**

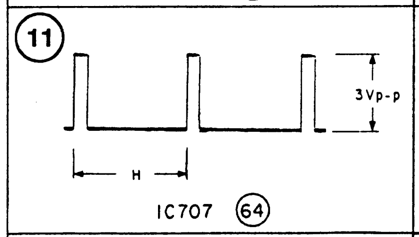
VC-153 BOARD (2/3)

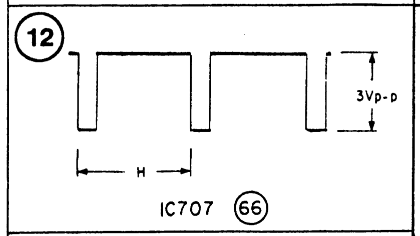

⑦ IC704 ⑭

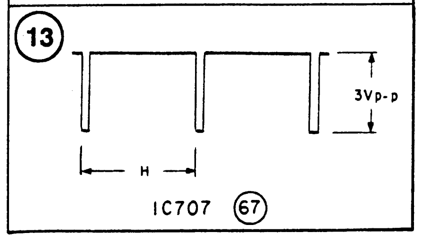

⑧ IC704 (63)

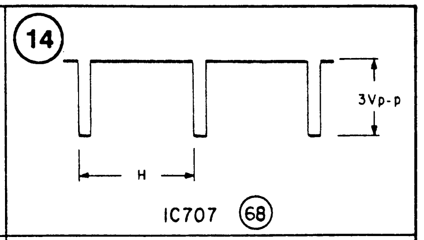

⑨ IC707 (30)

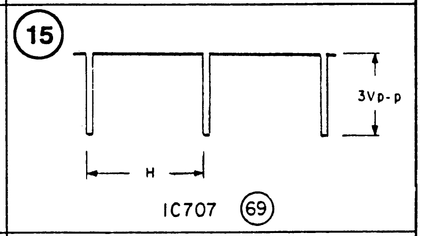

⑩ IC707 (51)

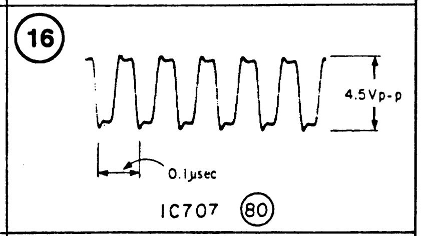

⑪ IC707 (64)

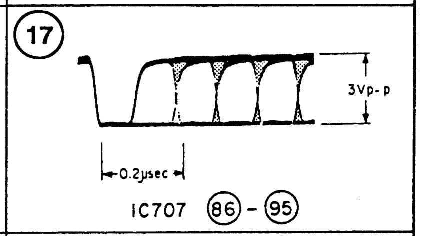

⑫ IC707 (66)

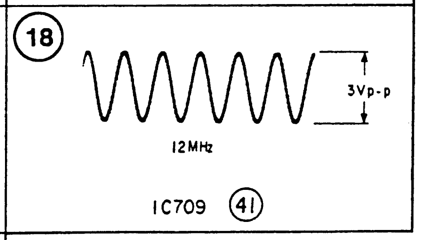

⑬ IC707 (67)


⑭ IC707 (68)


⑮ IC707 (69)


⑯ IC707 (80)

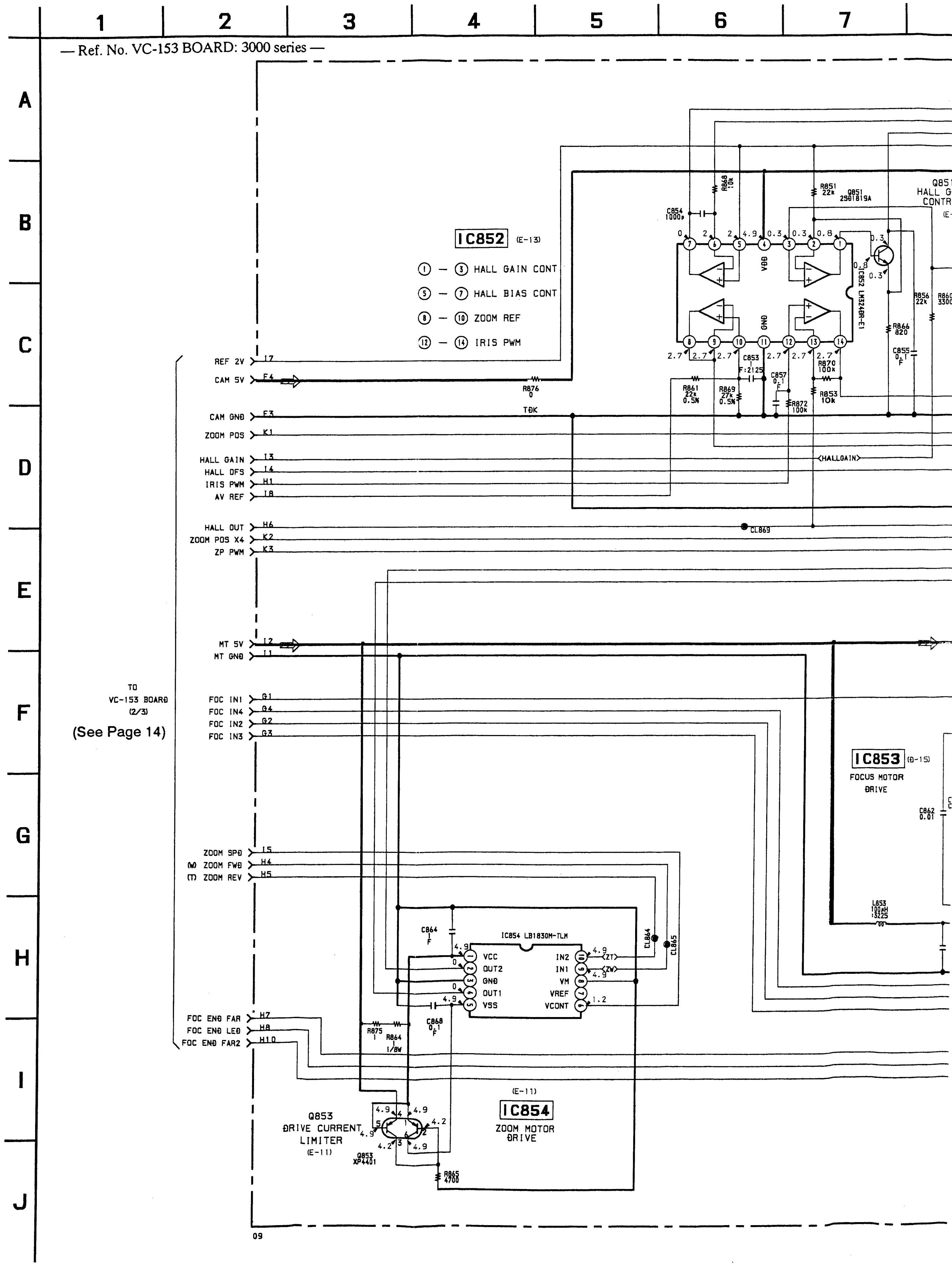

⑰ IC707 (86) - (95)


⑱ IC709 (41)

VC-153 (LENS DRIVE) SCHEMATIC DIAGRAM

• Refer to page 7 for Printed Wiring Board.

( ):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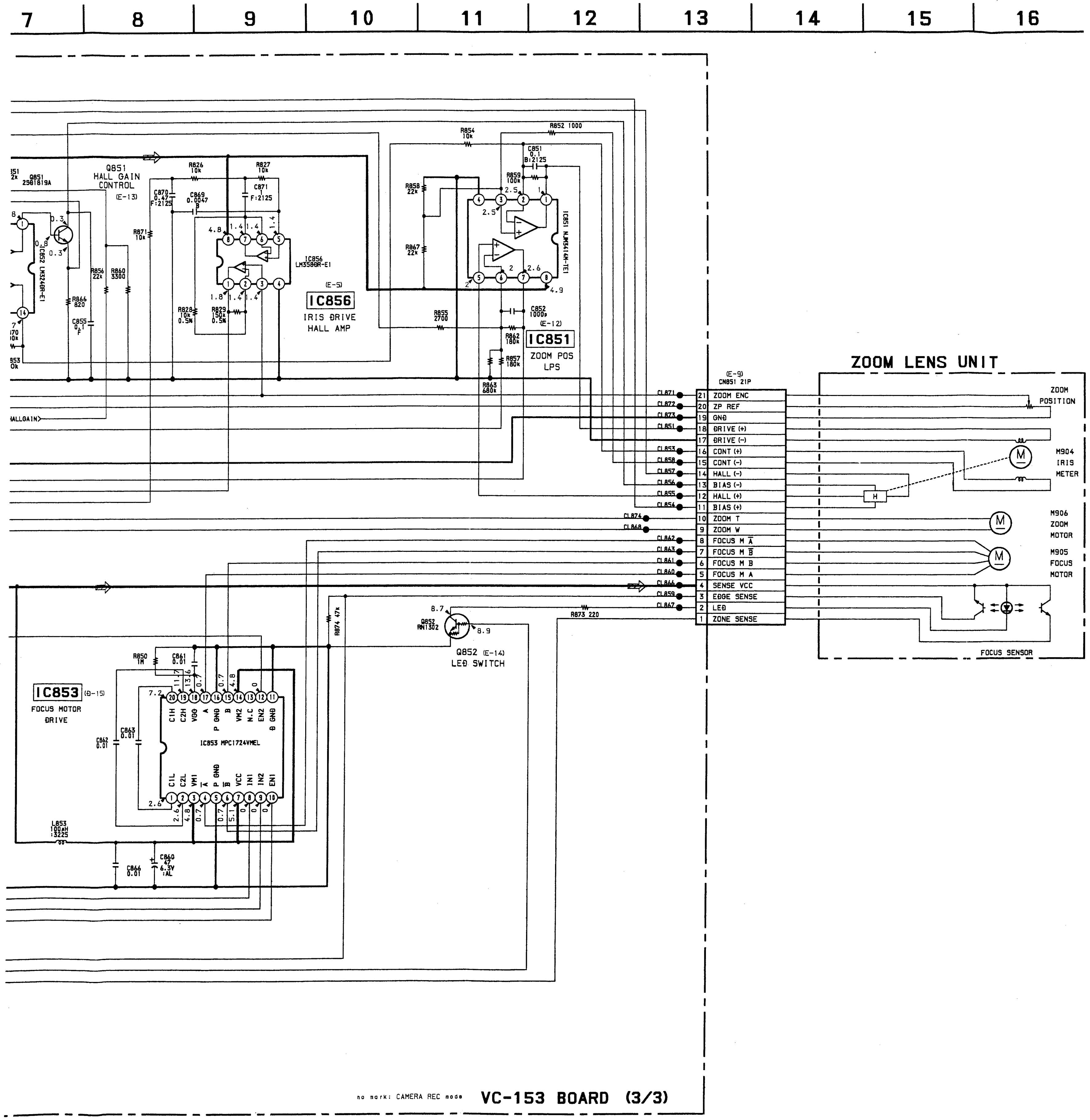
J
— Ref. No. VC-153 BOARD: 3000 series —
IC852 (E-13)
① — ③ HALL GAIN CONT
⑤ — ⑦ HALL BIAS CONT
⑧ — ⑩ ZOOM REF
⑫ — ⑭ IRIS PWM
REF 2V
CAM 5V
CAM GND
ZOOM POS
HALL GAIN
HALL OFS
IRIS PWM
AV REF
HALL OUT
ZOOM POS X4
ZP PWM
MT 5V
MT GND
FOC IN1
FOC IN4
FOC IN2
FOC IN3
ZOOM SPD
(W) ZOOM FWD
(T) ZOOM REV
FOC END FAR
FOC END LED
FOC END FAR2
TO
VC-153 BOARD
(2/3)
(See Page 14)
IC852 LM324DR-E1
Q851 2SB1819A
Q851
HALL G
CONTR
R876 0
TDK
CL869
HALLGAIN
IC853 (D-15)
FOCUS MOTOR
DRIVE
IC854 LB1830M-TLM
VCC
OUT2
GND
OUT1
VSS
IN2
IN1
VM
VREF
VCONT
Q853
DRIVE CURRENT
LIMITER
(E-11)
Q853 XP4401
(E-11)
IC854
ZOOM MOTOR
DRIVE
R875
R864 1/8W
C868
R865 4700
CL864
CL865
09

( ): The pages above correspond to CCD-TR350E SUPPLEMENT-1.


7
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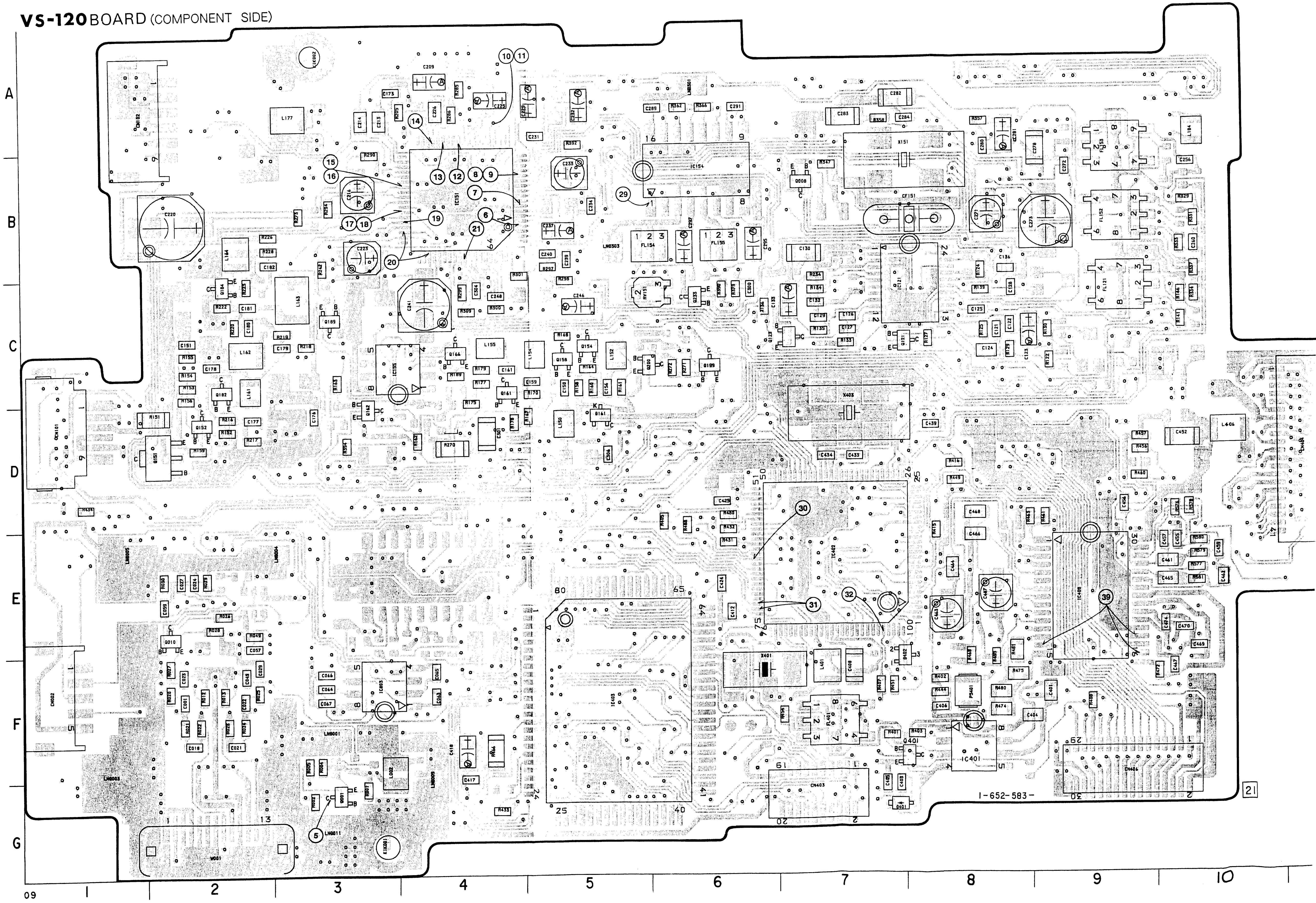
16
Q851
HALL GAIN
CONTROL
(E-13)
IC856
LM358ØR-E1
(E-5)
IC856
IRIS DRIVE
HALL AMP
IC851
NJM2414M-TE1
(E-12)
IC851
ZOOM POS
LPS
(E-9)
CN851 21P
21 ZOOM ENC
20 ZP REF
19 GND
18 DRIVE (+)
17 DRIVE (−)
16 CONT (+)
15 CONT (−)
14 HALL (−)
13 BIAS (−)
12 HALL (+)
11 BIAS (+)
10 ZOOM T
9 ZOOM W
8 FOCUS M A
7 FOCUS M B
6 FOCUS M B
5 FOCUS M A
4 SENSE VCC
3 EDGE SENSE
2 LED
1 ZONE SENSE
ZOOM LENS UNIT
ZOOM
POSITION
M904
IRIS
METER
M906
ZOOM
MOTOR
M905
FOCUS
MOTOR
FOCUS SENSOR
Q852
RN1302
Q852 (E-14)
LED SWITCH
IC853 (D-15)
FOCUS MOTOR
DRIVE
IC853 MPC1724VMEL
no mark: CAMERA REC mode
VC-153 BOARD (3/3)

VS-120 (REC/PB HEAD AMPLIFIER, VIDEO, SERVO, SYSTEM CONTROL) PRINTED WIRING BOARD

— Ref. No. VS-120 BOARD: 4000 series —

VS-120 BOARD (COMPONENT SIDE)


A
B
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D
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G
09
1
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7
8
9
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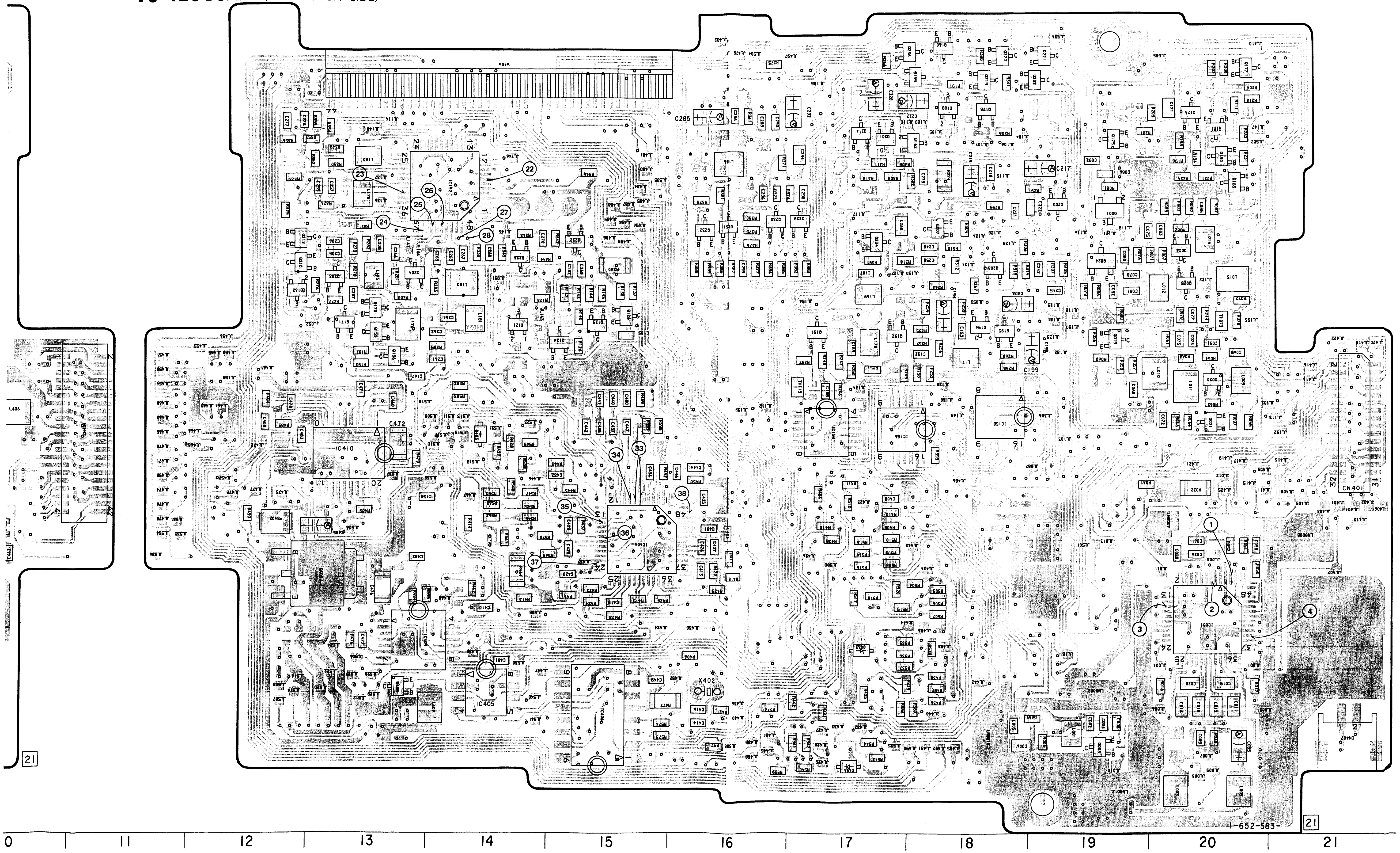
IC151
IC154
IC402
IC403
IC405
IC401
IC406
IC155
IC003
X151
X401
X403
CN101
CN102
CN002
CN403
CN404
W001
1-652-583-
21

VS-120 BOARD (CONDUCTOR SIDE)



IC410
IC405
IC404
IC152
IC150
IC156
IC158
IC001
CN401
CN402
X402
C472
C285
C217
C199
1-652-583-
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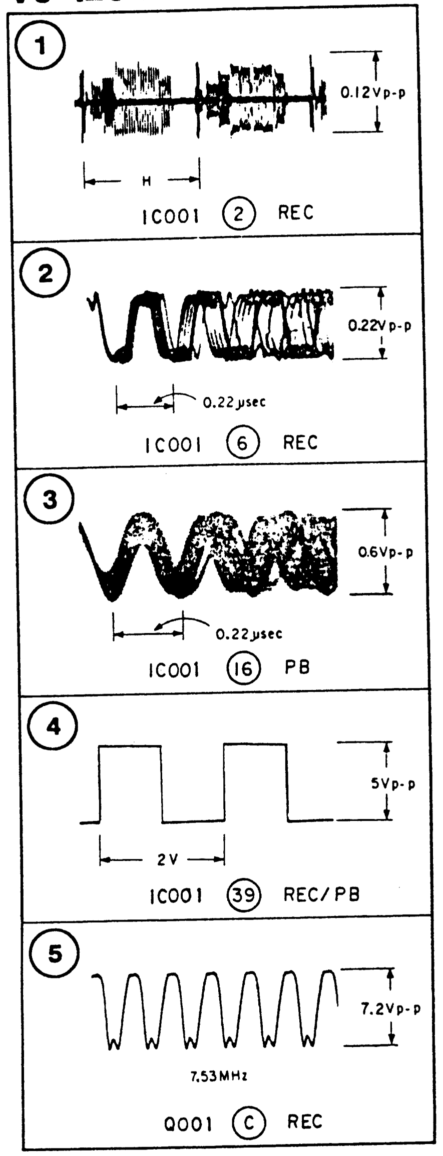
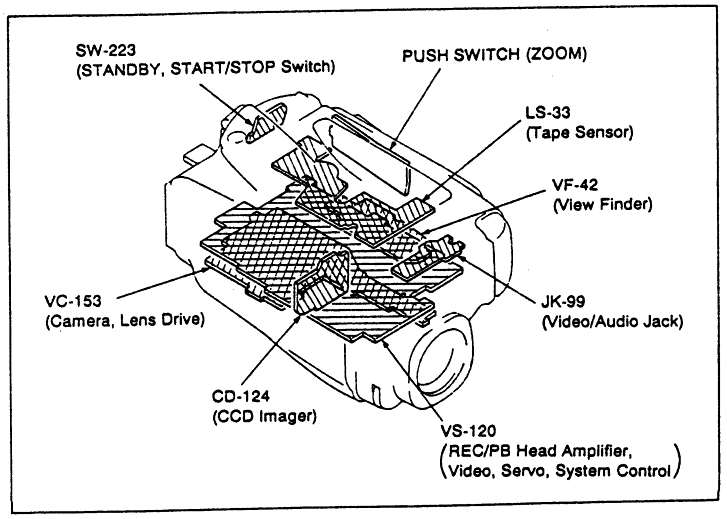
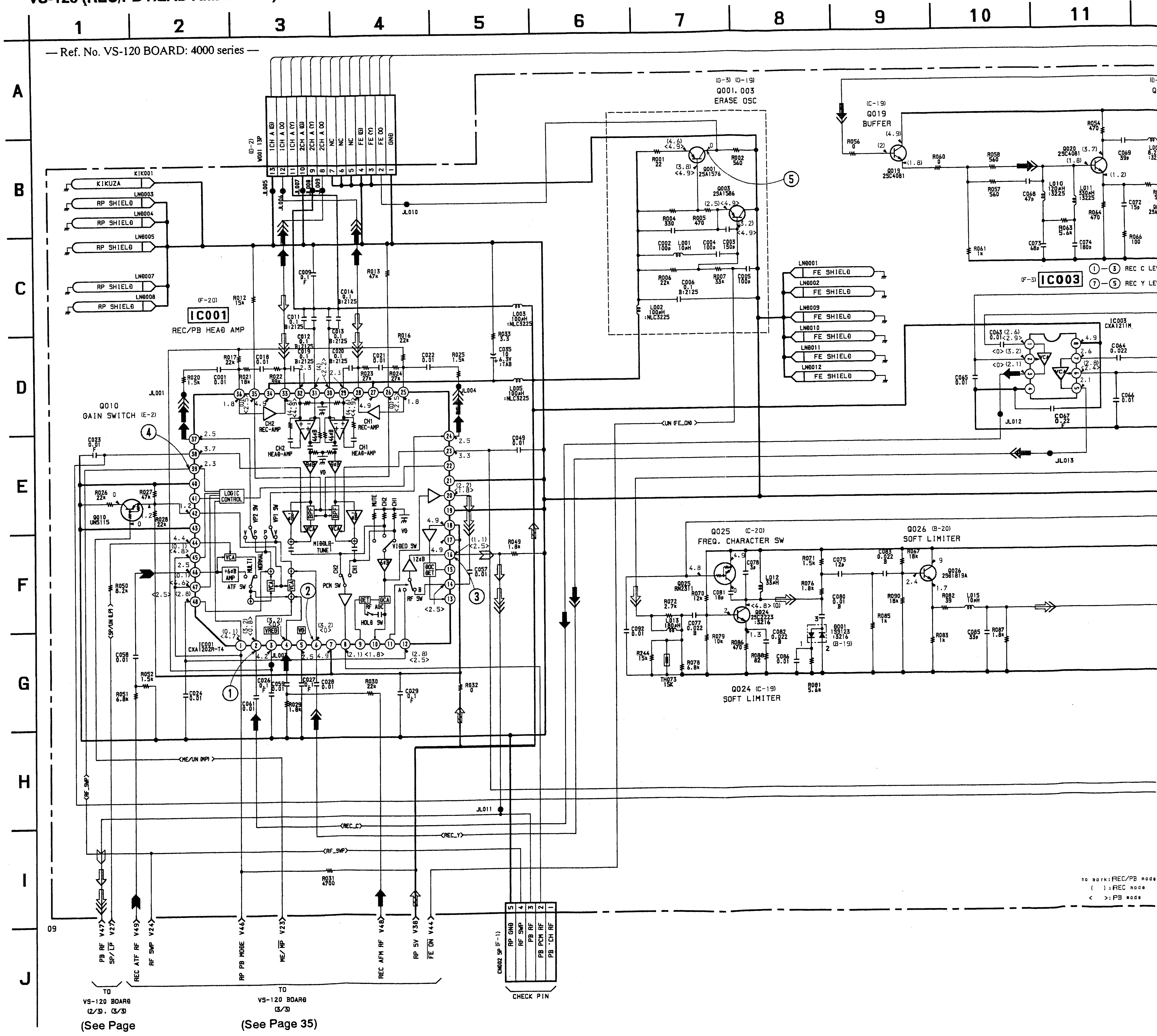
VS-120 BOARD(1/3)




SW-223
(STANDBY, START/STOP Switch)
PUSH SWITCH (ZOOM)
LS-33
(Tape Sensor)
VF-42
(View Finder)
VC-153
(Camera, Lens Drive)
JK-99
(Video/Audio Jack)
CD-124
(CCD Imager)
VS-120
(REC/PB Head Amplifier,
Video, Servo, System Control)

VS-120 (REC/PB HEAD AMPLIFIER) SCHEMATIC DIAGRAM

( ): The pages above correspond to CCD-TR350E SUPPLEMENT-1.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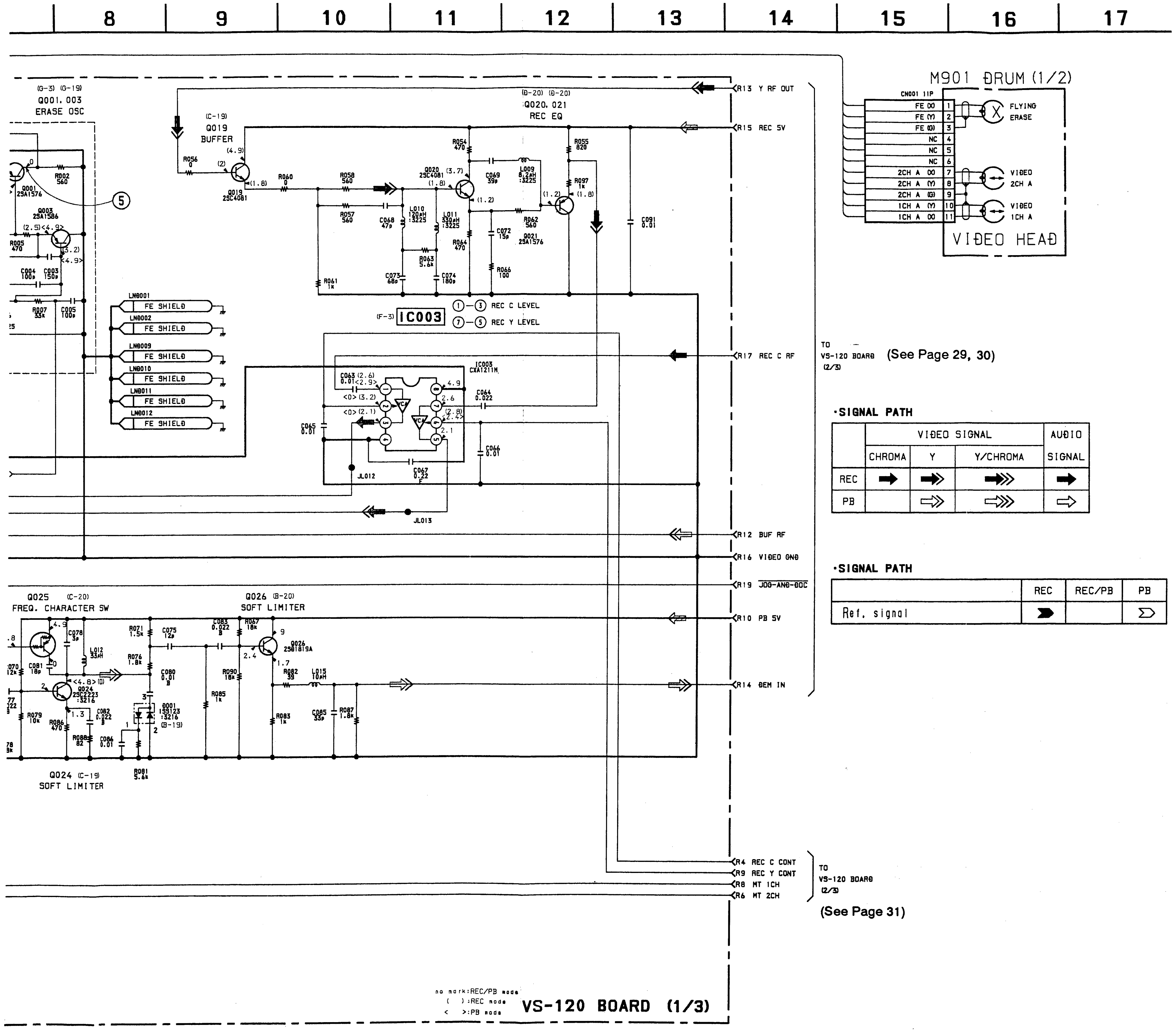
— Ref. No. VS-120 BOARD: 4000 series —
IC001
REC/PB HEAD AMP
CXA1202R-T4
Q001, 003
ERASE OSC
Q019
BUFFER
IC003
CXA1211M
Q010
GAIN SWITCH
Q025
FREQ. CHARACTER SW
Q026
SOFT LIMITER
Q024
SOFT LIMITER
KIKUZA
RP SHIELD
FE SHIELD
LOGIC CONTROL
CH1 REC-AMP
CH2 REC-AMP
CH1 HEAD-AMP
CH2 HEAD-AMP
MIDDLE-TUNE
VIDEO SW
PCM SW
RF SW
HOLD SW
RF AGC
VREF
ATF SW
CHECK PIN
CN002
RP GND
RF SWP
PB RF
PB PCM RF
PB 'CH RF
PB RF V47
SP/LP V27
REC ATF RF V49
RF SWP V24
RP PB MODE V46
ME/MP V23
REC AFM RF V48
RP 5V V38
FE ON V44
TO VS-120 BOARD (2/3), (3/3)
(See Page 29, 35)
TO VS-120 BOARD (3/3)
(See Page 35)
REC_C
REC_Y
RF_SWP
ME/UN (MP)
UN (FE_ON)
no mark: REC/PB mode
( ): REC mode
< >: PB mode

d to CCD-TR350E SUPPLEMENT-1.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M901 DRUM (1/2)
CN001 11P
FE (X)
FE (Y)
FE (G)
NC
2CH A (X)
2CH A (Y)
2CH A (G)
1CH A (Y)
1CH A (X)
FLYING ERASE
VIDEO 2CH A
VIDEO 1CH A
VIDEO HEAD
Q001, 003 ERASE OSC
Q019 BUFFER
Q020, 021 REC EQ
IC003 CXA1211M
① - ③ REC C LEVEL
⑦ - ⑤ REC Y LEVEL
FE SHIELD
Q025 FREQ. CHARACTER SW
Q026 SOFT LIMITER
Q024 SOFT LIMITER
R13 Y RF OUT
R15 REC 5V
R17 REC C RF
R12 BUF RF
R16 VIDEO GND
R19 JOG-ANG-DOC
R10 PB 5V
R14 8EM IN
TO VS-120 BOARD (2/3)
(See Page 29, 30)
R4 REC C CONT
R9 REC Y CONT
R8 MT 1CH
R6 MT 2CH
TO VS-120 BOARD (2/3)
(See Page 31)
no mark:REC/PB mode
( ) :REC mode
< >:PB mode
VS-120 BOARD (1/3)

·SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡≫	➡≫≫	➡
PB		⇨≫	⇨≫≫	⇨

·SIGNAL PATH

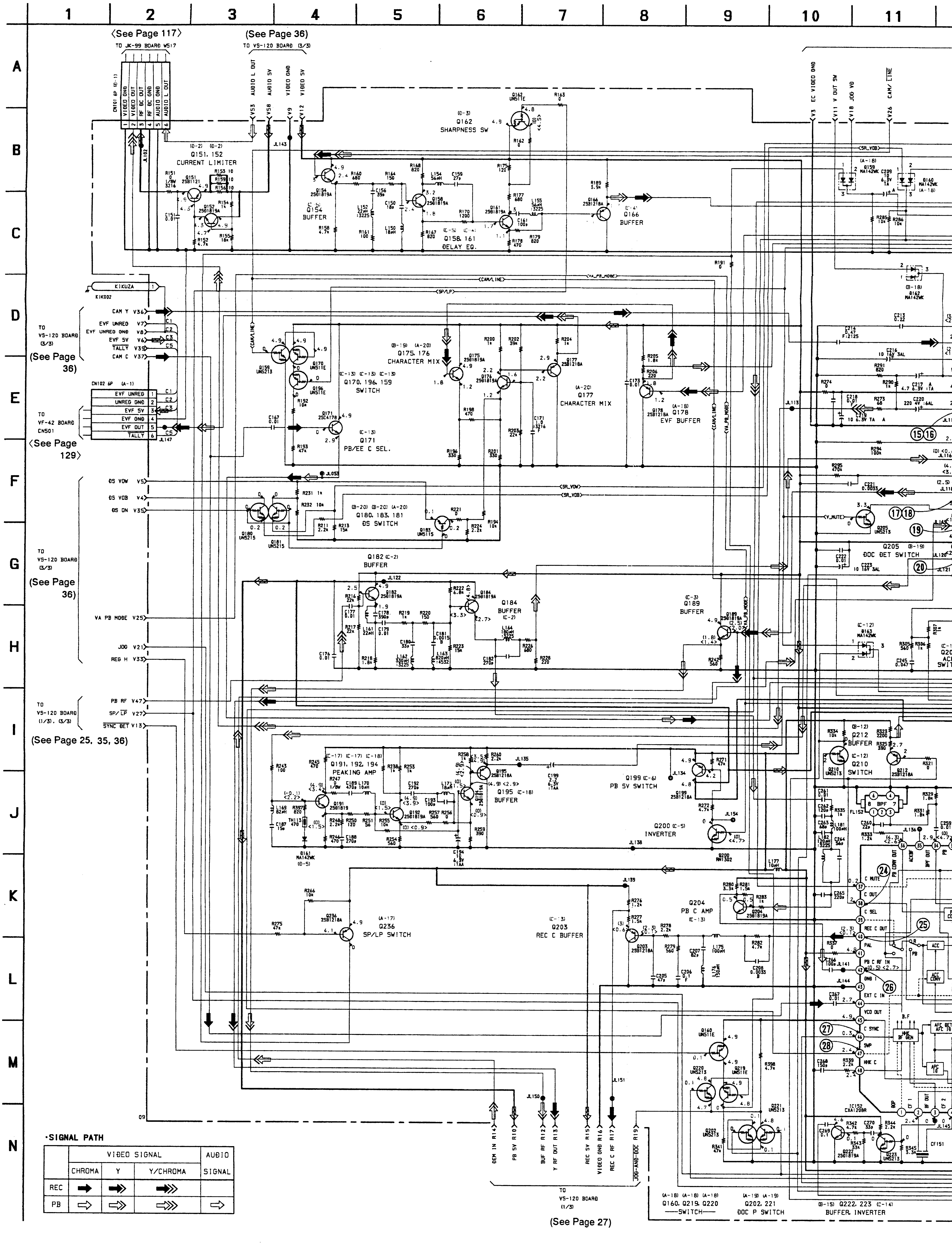
	REC	REC/PB	PB
Ref. signal	➤		▷

VS-120 (VIDEO) SCHEMATIC DIAGRAM

— Ref. No. VS-120 BOARD: 4000 series —

- Refer to page 21 for Printed Wiring Board.

( ): The pages above correspond to CCD-TR350E SUPPLEMENT-1.
< >: The pages above correspond to SERVICE MANUAL (Original).



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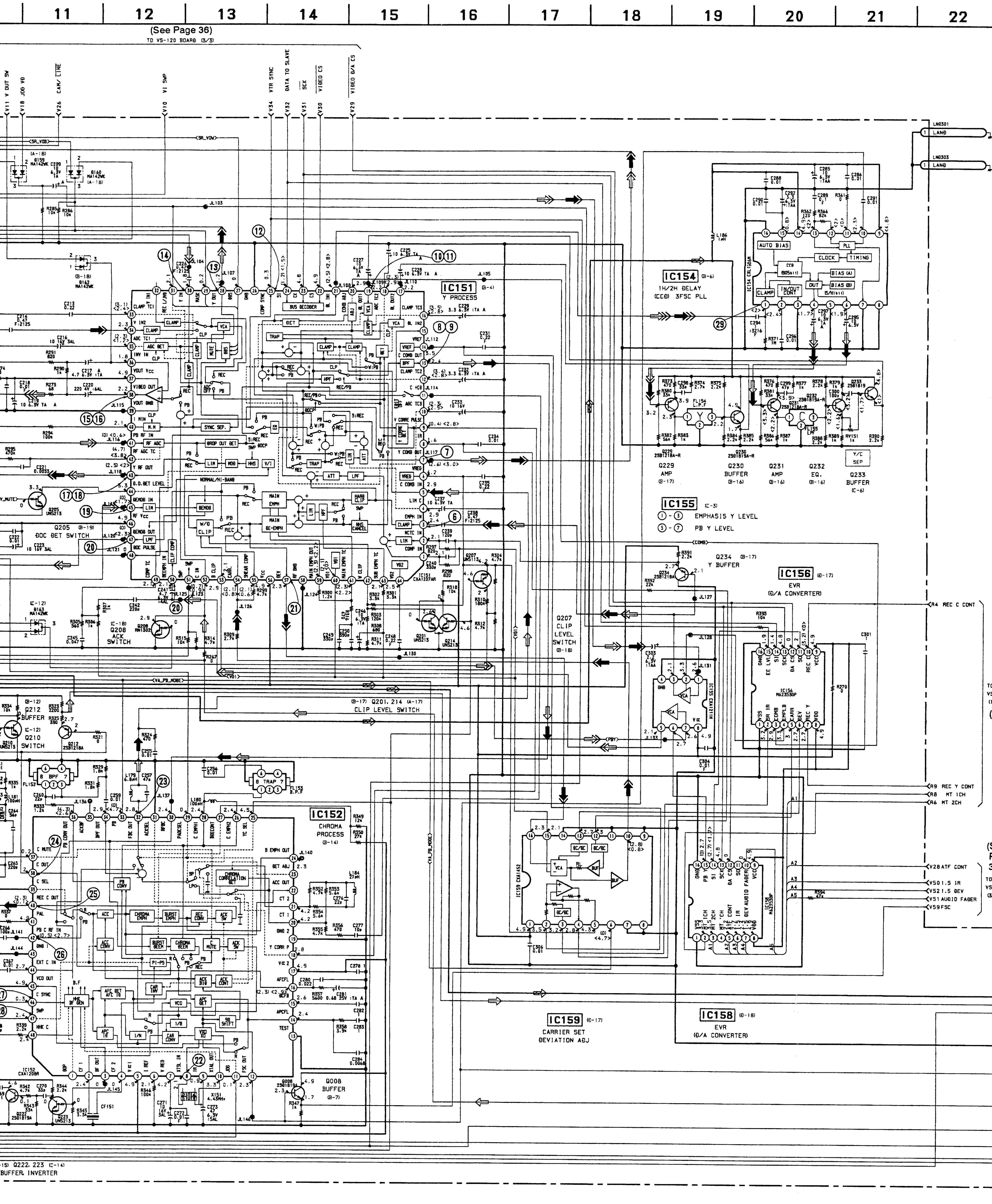
⟨See Page 117⟩
TO JK-99 BOARD WS17
(See Page 36)
TO VS-120 BOARD (3/3)
CN101 6P
VIDEO GND
VIDEO OUT
RF BC GND
RF BC OUT
AUDIO GND
AUDIO L OUT
AUDIO L OUT
AUDIO 5V
VIDEO GND
VIDEO 5V
Q162 SHARPNESS SW
Q151, 152 CURRENT LIMITER
Q154 BUFFER
Q158, 161 DELAY EQ.
Q166 BUFFER
TO VS-120 BOARD (3/3)
(See Page 36)
CAM Y V36
EVF UNREG V7
EVF UNREG GND V8
EVF 5V V6
TALLY V39
CAM C V37
Q170, 196, 159 SWITCH
Q175, 176 CHARACTER MIX
Q177 CHARACTER MIX
Q178 EVF BUFFER
Q171 PB/EE C SEL.
CN102 6P
EVF UNREG
UNREG GND
EVF 5V
EVF GND
EVF OUT
TALLY
TO VF-42 BOARD CN501
⟨See Page 129⟩
OS VOW V5
OS VOB V4
OS ON V35
Q180, 183, 181 OS SWITCH
Q205 DOC DET SWITCH
Q182 BUFFER
Q184 BUFFER
Q189 BUFFER
TO VS-120 BOARD (3/3)
(See Page 36)
VA PB MODE V25
JOG V21
REG H V33
TO VS-120 BOARD (1/3), (3/3)
PB RF V47
SP/LP V27
SYNC DET V13
(See Page 25, 35, 36)
Q191, 192, 194 PEAKING AMP
Q195 BUFFER
Q199 PB 5V SWITCH
Q200 INVERTER
Q210 SWITCH
Q212 BUFFER
Q236 SP/LP SWITCH
Q203 REC C BUFFER
Q204 PB C AMP
IC152 CXA1208R
EC VIDEO GND V3
V OUT 5V V11
JOG V0 V18
CAM/LINE V26
DEM IN R14
PB 5V R10
BUF RF R12
Y RF OUT R13
REC 5V R15
VIDEO GND R16
REC C RF R17
JOG-AND-DOC R19
TO VS-120 BOARD (1/3)
(See Page 27)
Q160, Q219, Q220 SWITCH
Q202, 221 DOC P SWITCH
Q222, 223 BUFFER INVERTER

·SIGNAL PATH

	VIDEO SIGNAL			AUDIO
	CHROMA	Y	Y/CHROMA	SIGNAL
REC	➡	➠	➠➠	➡
PB	⇨	⇨	⇨⇨	⇨


11
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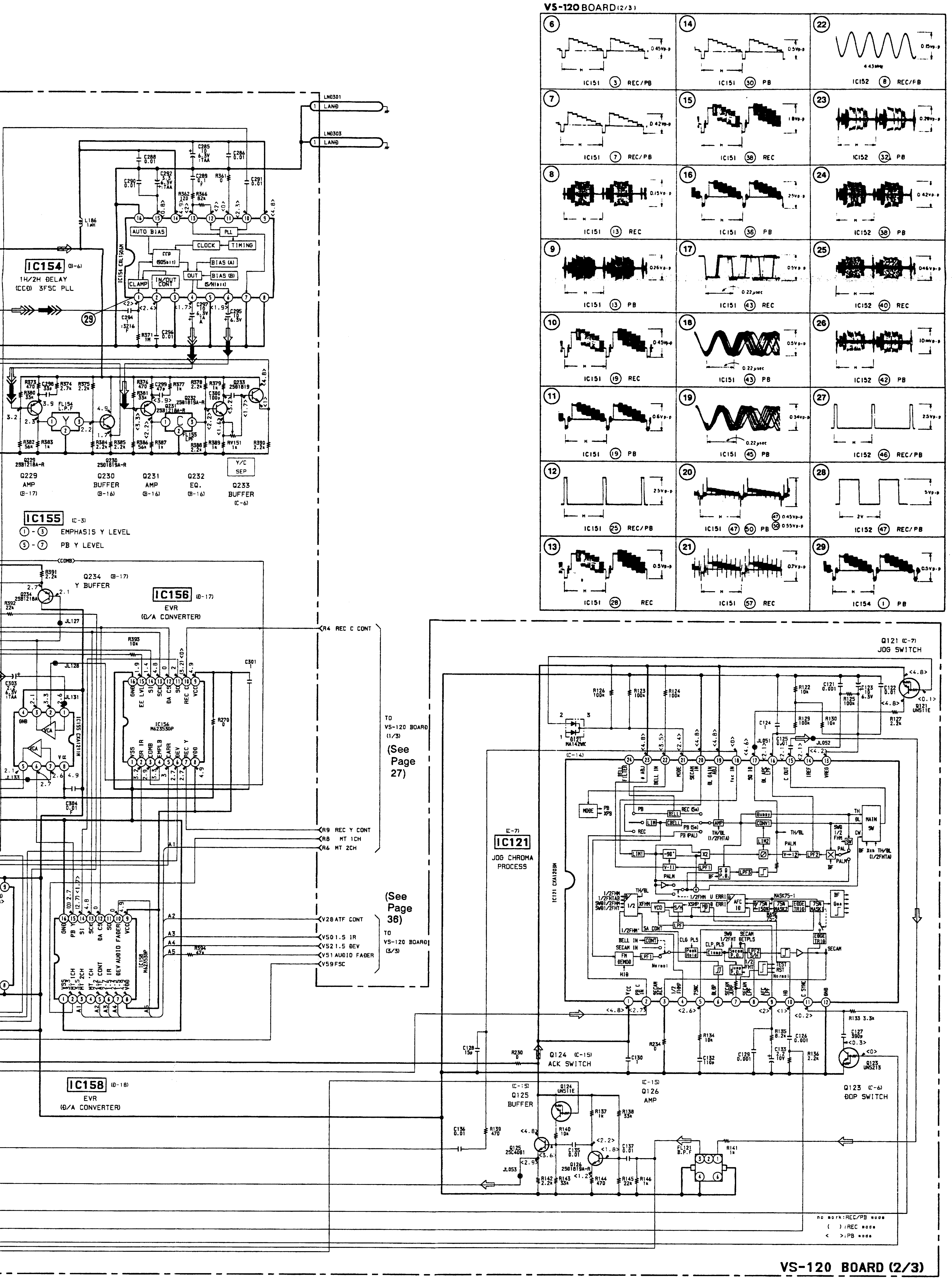
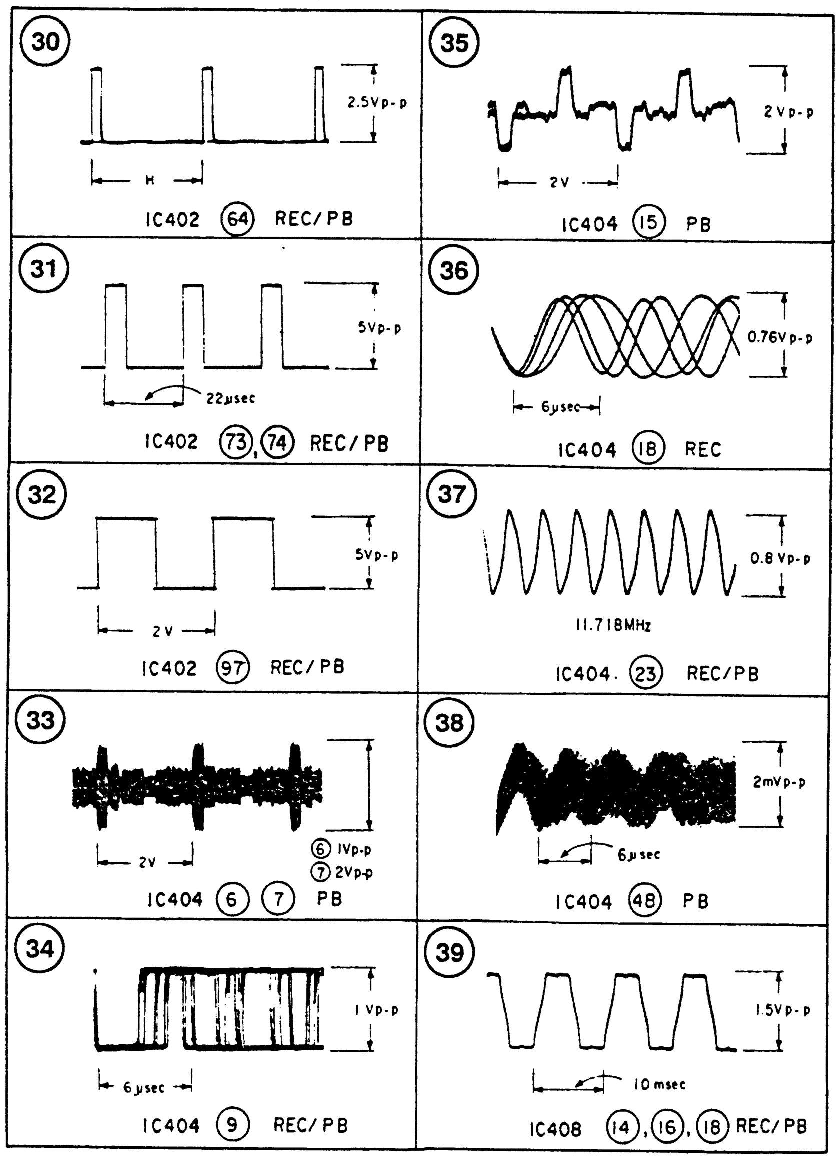
22
(See Page 36)
TO VS-120 BOARD (3/3)
V11 V OUT SW
V18 JOG VD
V26 CAM/ LINE
V10 VI SWP
V34 VTR SYNC
V32 DATA TO SLAVE
V31 SCK
V30 VIDEO CS
V29 VIDEO D/A CS
LN0301
LAND
LN0303
LAND
IC151
Y PROCESS
IC151 CXA1207AR
IC152
CHROMA PROCESS
IC152 CXA1208R
IC154
1H/2H DELAY (CCD) 3FSC PLL
IC154 CXL1504M
AUTO BIAS
PLL
CLOCK
TIMING
BIAS (A)
BIAS (B)
CLAMP
IN/OUT CONT
OUT
IC155
①-③ EMPHASIS Y LEVEL
⑤-⑦ PB Y LEVEL
IC155 CXA1211K
IC156
EVR
(D/A CONVERTER)
IC156 M62353GP
IC158
EVR
(D/A CONVERTER)
IC158 M62353GP
IC159
CARRIER SET DEVIATION ADJ
IC159 CXA1452
Q229 AMP
Q230 BUFFER
Q231 AMP
Q232 EQ.
Q233 BUFFER
Y/C SEP
Q234 Y BUFFER
Q207 CLIP LEVEL SWITCH
Q201, 214 CLIP LEVEL SWITCH
Q205 DOC DET SWITCH
Q208 ACK SWITCH
Q212 BUFFER
Q210 SWITCH
Q008 BUFFER
Q222, 223 BUFFER, INVERTER
BPF 7
TRAP 7
FL153 B.P.F
FL154 L.P.F
FL155 LPF
X151 4.43MHz
CF151
R4 REC C CONT
R9 REC Y CONT
R8 MT 1CH
R6 MT 2CH
V28 ATF CONT
V50 1.5 IR
V52 1.5 DEV
V51 AUDIO FADER
V59 FSC
SR_VDB
SR_VDW
VA_PB_MODE
COMB
PBY
VD1

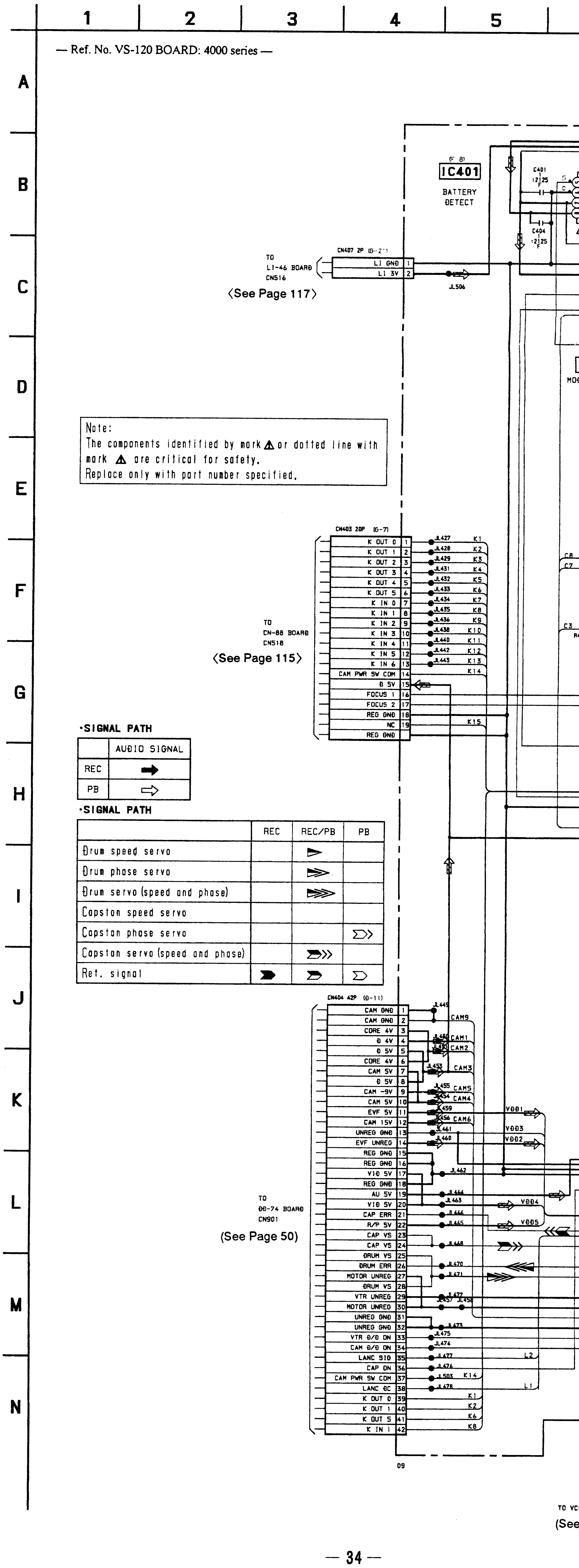

VS-120 BOARD(2/3)
IC151 ③ REC/PB
IC151 ⑦ REC/PB
IC151 ⑬ REC
IC151 ⑬ PB
IC151 ⑲ REC
IC151 ⑲ PB
IC151 ㉕ REC/PB
IC151 ㉘ REC
IC151 ㉚ PB
IC151 ㊳ REC
IC151 ㊱ PB
IC151 ㊸ REC
IC151 ㊸ PB
IC151 ㊺ PB
IC151 ㊼ ㊿ PB
IC151 ㊾ REC
IC152 ⑧ REC/PB
IC152 ㉜ PB
IC152 ㊳ PB
IC152 ㊵ REC
IC152 ㊷ PB
IC152 ㊻ REC/PB
IC152 ㊼ REC/PB
IC154 ① PB
4.43MHz
0.22μsec
IC154 (B-6)
1H/2H DELAY
(CCD) 3FSC PLL
AUTO BIAS
CLOCK
TIMING
PLL
BIAS (A)
BIAS (B)
CLAMP
IN/OUT CONT
OUT
IC154 CXL1504M
LN0301 LAND
LN0303 LAND
Q229 AMP (B-17)
Q230 BUFFER (B-16)
Q231 AMP (B-16)
Q232 EQ. (B-16)
Q233 BUFFER (C-6)
Y/C SEP
FL154 L.P.F
FL155 LPF
IC155 (C-3)
①-③ EMPHASIS Y LEVEL
⑤-⑦ PB Y LEVEL
Q234 (B-17) Y BUFFER
IC156 (D-17)
EVR (D/A CONVERTER)
IC156 M62353GP
IC158 (D-18)
EVR (D/A CONVERTER)
IC158 M62353GP
IC153 CXA1114M
VCA
R4 REC C CONT
R9 REC Y CONT
R8 MT 1CH
R6 MT 2CH
V28 ATF CONT
V50 1.5 1R
V52 1.5 BEV
V51 AUDIO FADER
V59 FSC
TO VS-120 BOARD (1/3) (See Page 27)
(See Page 36) TO VS-120 BOARD (3/3)
Q121 (C-7) JOG SWITCH
Q121 UN511E
D121 MA142WK
IC121 (C-7)
JOG CHROMA PROCESS
IC121 CXA1203M
Q124 (C-15) ACK SWITCH
Q125 (C-15) BUFFER
Q125 2SC4081
Q124 UN511E
Q126 (C-15) AMP
Q126 2SB1619A-R
Q123 (C-6) DOP SWITCH
Q123 UN5213
FL121 B.P.F
no mark: REC/PB mode
( ): REC mode
< >: PB mode
VS-120 BOARD (2/3)

VS-120 BOARD(3/3)



VS-120 (SERVO, SYSTEM CONTROL) SCHEMATIC DIAGRAM

• Refer to



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J
K
L
M
N
— Ref. No. VS-120 BOARD: 4000 series —
(F 8)
IC401
BATTERY DETECT
C401
C404
TO
L1-46 BOARD
CN516
CN407 2P (G-2)
L1 GND 1
L1 3V 2
JL506
⟨See Page 117⟩
MD
CN403 20P (G-7)
K OUT 0 1
K OUT 1 2
K OUT 2 3
K OUT 3 4
K OUT 4 5
K OUT 5 6
K IN 0 7
K IN 1 8
K IN 2 9
K IN 3 10
K IN 4 11
K IN 5 12
K IN 6 13
CAM PWR SW COM 14
D 5V 15
FOCUS 1 16
FOCUS 2 17
REG GND 18
NC 19
REG GND
JL427
JL428
JL429
JL431
JL432
JL433
JL434
JL435
JL436
JL438
JL440
JL442
JL443
K1
K2
K3
K4
K5
K6
K7
K8
K9
K10
K11
K12
K13
K14
K15
TO
CN-88 BOARD
CN518
⟨See Page 115⟩
C8
C7
C3
CN404 42P (D-11)
CAM GND 1
CAM GND 2
CORE 4V 3
D 4V 4
D 5V 5
CORE 4V 6
CAM 5V 7
D 5V 8
CAM -9V 9
CAM 5V 10
EVF 5V 11
CAM 15V 12
UNREG GND 13
EVF UNREG 14
REG GND 15
REG GND 16
VID 5V 17
REG GND 18
AU 5V 19
VID 5V 20
CAP ERR 21
R/P 5V 22
CAP VS 23
CAP VS 24
DRUM VS 25
DRUM ERR 26
MOTOR UNREG 27
DRUM VS 28
VTR UNREG 29
MOTOR UNREG 30
UNREG GND 31
UNREG GND 32
VTR D/D ON 33
CAM D/D ON 34
LANC SIG 35
CAP ON 36
CAM PWR SW COM 37
LANC DC 38
K OUT 0 39
K OUT 1 40
K OUT 5 41
K IN 1 42
JL449
JL450
JL451
JL453
JL455
JL454
JL459
JL456
JL461
JL460
JL462
JL464
JL463
JL466
JL465
JL468
JL470
JL471
JL472
JL457
JL458
JL473
JL475
JL474
JL477
JL476
JL503
JL478
CAM9
CAM1
CAM2
CAM3
CAM5
CAM4
CAM6
VDD1
VDD3
VDD2
VDD4
VDD5
L2
L1
K14
K1
K2
K6
K8
TO
DD-74 BOARD
CN901
(See Page 50)
09
TO VC
(See

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

·SIGNAL PATH

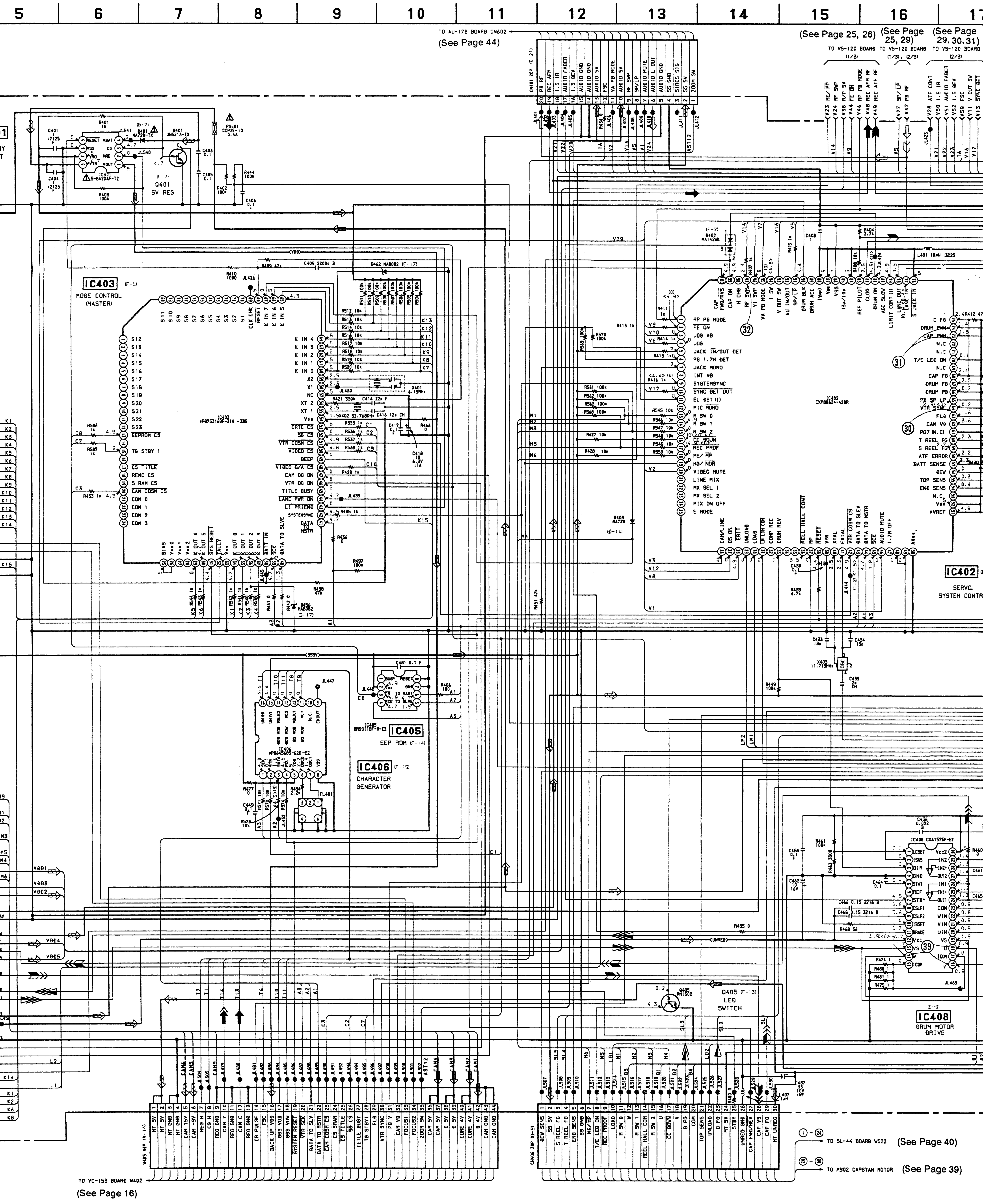
	AUDIO SIGNAL
REC	➡
PB	⇨

·SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▻	
Drum phase servo		▻▻	
Drum servo (speed and phase)		▻▻▻	
Capstan speed servo			
Capstan phase servo			⋙
Capstan servo (speed and phase)		➤⋙	
Ref. signal	➧	➢	⇨

- Refer to page 21 for Printed Wiring Board.

( ): The pages above correspond to CCD-TR350E SUPPLEMENT-1.
< >: The pages above correspond to SERVICE MANUAL (Original).



5
6
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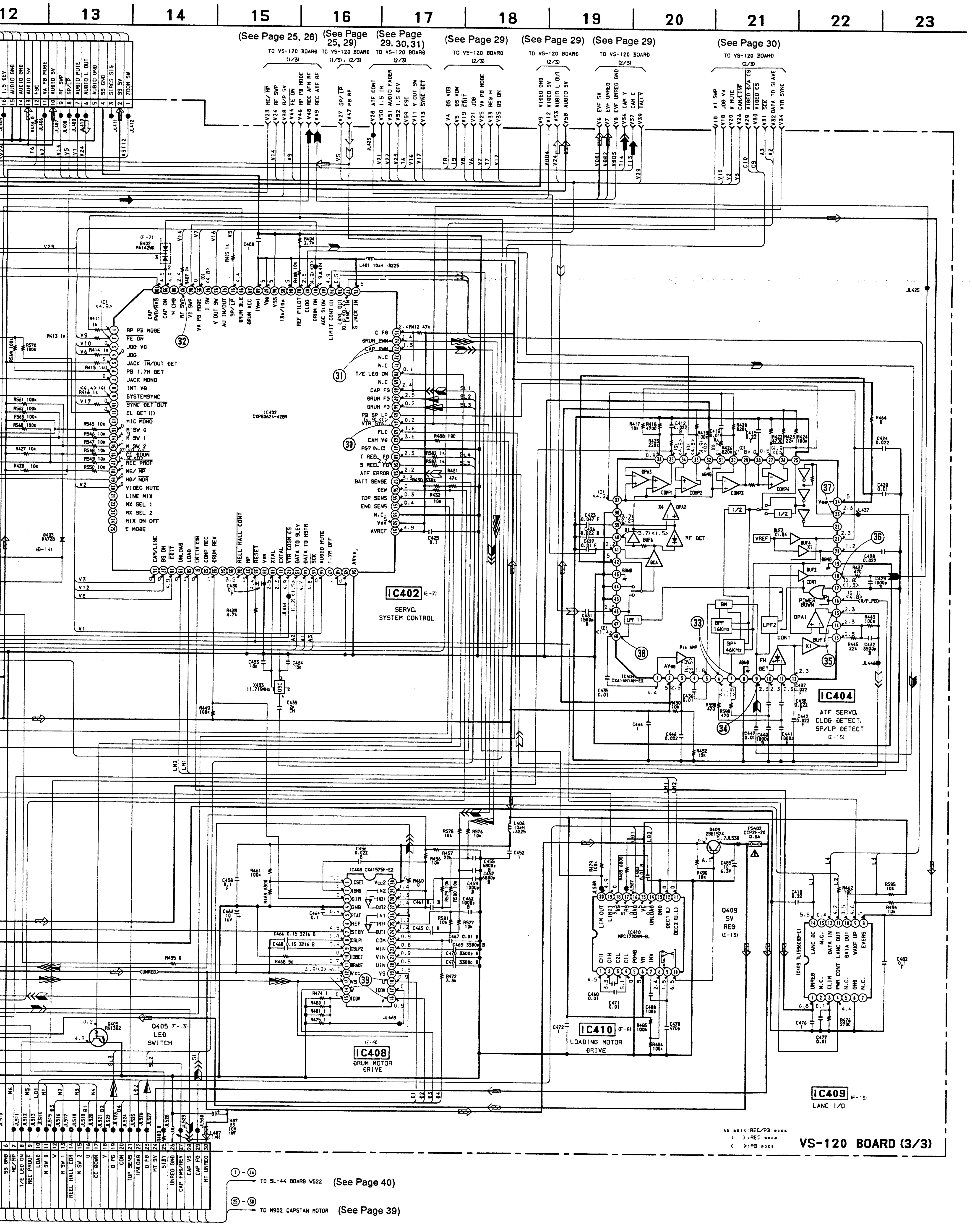
10
11
12
13
14
15
16
17
TO AU-178 BOARD CN602
(See Page 44)
(See Page 25, 26)
(See Page 25, 29)
(See Page 29, 30, 31)
TO VS-120 BOARD (1/3)
TO VS-120 BOARD (1/3), (2/3)
TO VS-120 BOARD (2/3)
CN401 20P
Q401 5V REG
IC403 MODE CONTROL (MASTER)
IC402 SERVO, SYSTEM CONTROL
CXP80624-428R
IC405 EEP ROM
BR9011BF-R-E2
IC406 CHARACTER GENERATOR
IC408 DRUM MOTOR DRIVE
CXA1575N-E2
Q405 LED SWITCH
X401 4.19MHz
X402 32.768KHz
X403 11.719MHz
TO VC-153 BOARD W402
(See Page 16)
W405 44P
CN406 30P
①-㉔ TO SL-44 BOARD W522 (See Page 40)
㉕-㉚ TO M902 CAPSTAN MOTOR (See Page 39)

EMENT-1.
Original).

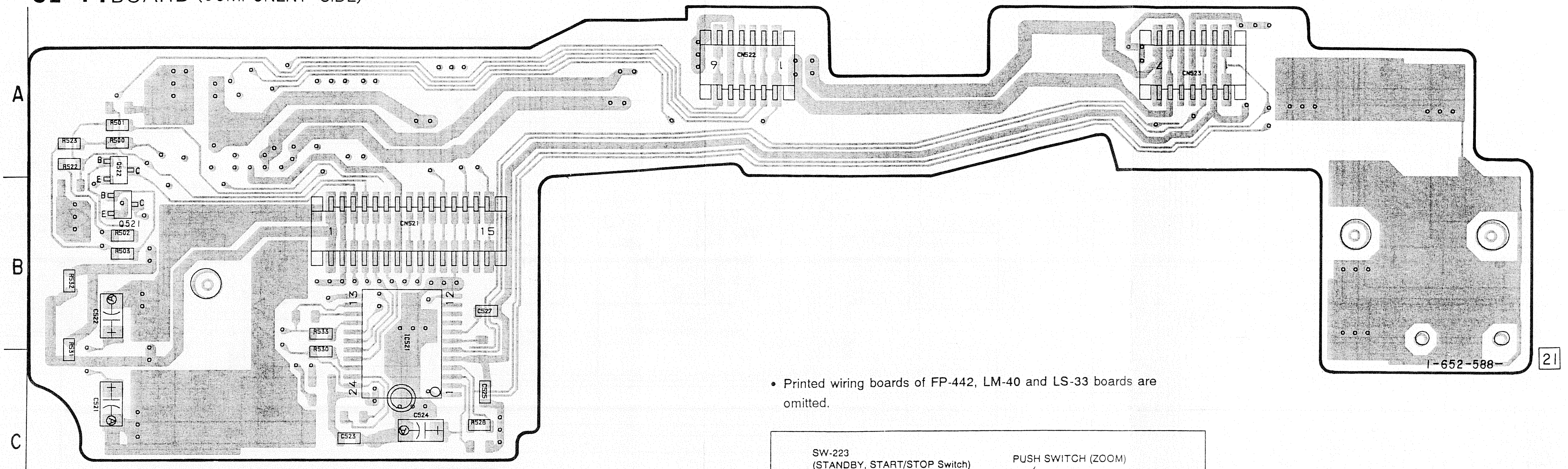

12
13
14
15
16
17
18
19
20
21
22
23
(See Page 25, 26)
(See Page 25, 29)
(See Page 29, 30, 31)
(See Page 29)
(See Page 29)
(See Page 29)
(See Page 30)
TO VS-120 BOARD (1/3)
TO VS-120 BOARD (1/3), (2/3)
TO VS-120 BOARD (2/3)
IC402 CXP80624-428R
IC402
SERVO, SYSTEM CONTROL
IC404 CXA1481AR-E2
IC404
ATF SERVO, CLOG DETECT, SP/LP DETECT
IC408 CXA1575K-E2
IC408
DRUM MOTOR DRIVE
IC410 MPC1720VM-EL
IC410
LOADING MOTOR DRIVE
IC409 TL5960B-E1
IC409
LANC I/O
Q405 LED SWITCH
Q409 5V REG
X403 11.719MHz
①-㉔ TO SL-44 BOARD W522 (See Page 40)
㉕-㉚ TO M902 CAPSTAN MOTOR (See Page 39)
no mark: REC/PB mode
( ): REC mode
< >: PB mode
VS-120 BOARD (3/3)

SERVO, SYSTEM CONTROL

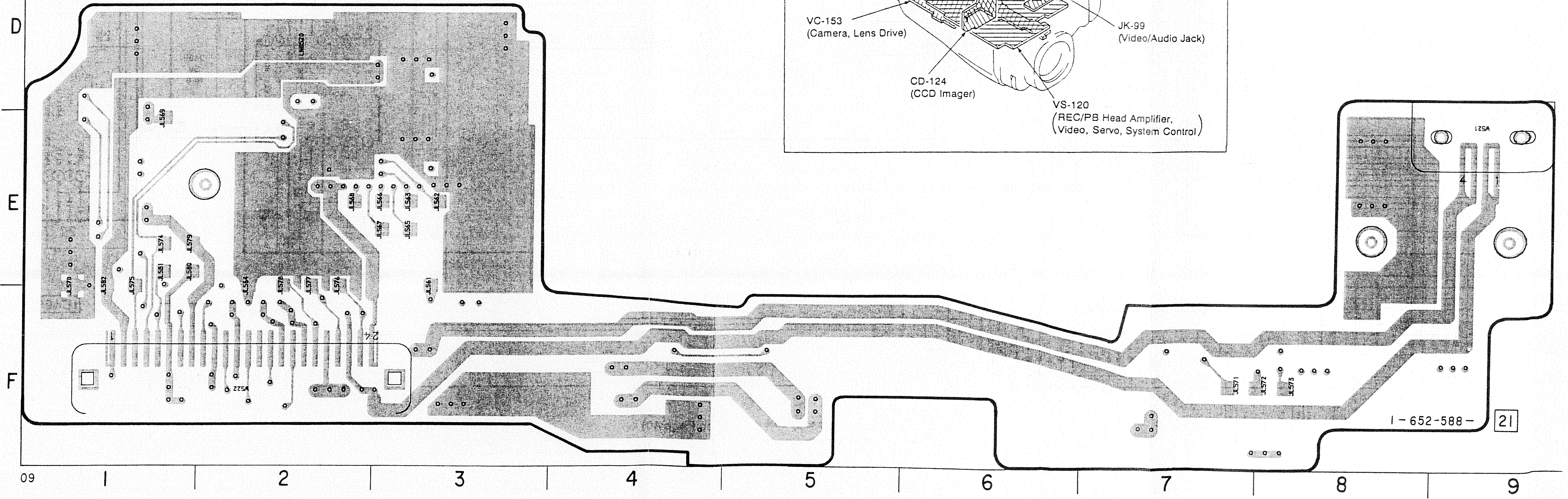
SL-44 (MECHA CONTROL) PRINTED WIRING BOARD

— Ref. No. SL-44 BOARD: 5000 series —

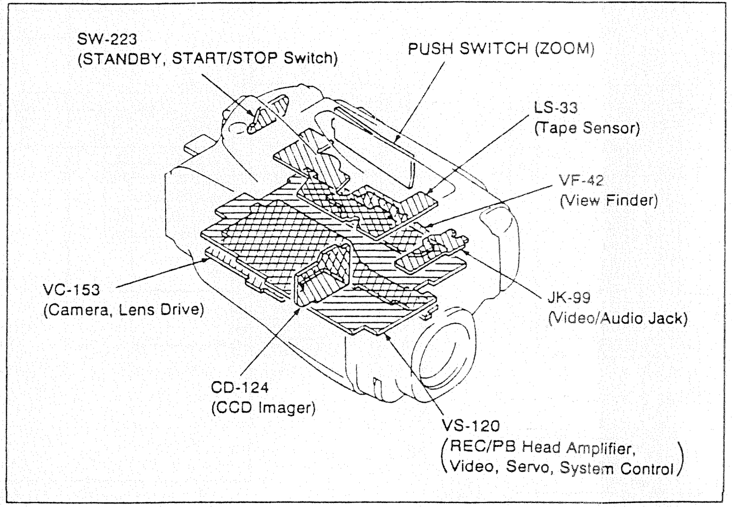
SL-44 BOARD (COMPONENT SIDE)


A
B
C
R501
R500
R523
R522
Q522
Q521
R502
R503
CN521
1
15
CN522
CN523
IC531
13
12
24
1
C527
R533
R530
C522
R532
R531
C521
C524
C523
C525
R528
1-652-588-
21

SL-44 BOARD (CONDUCTOR SIDE)

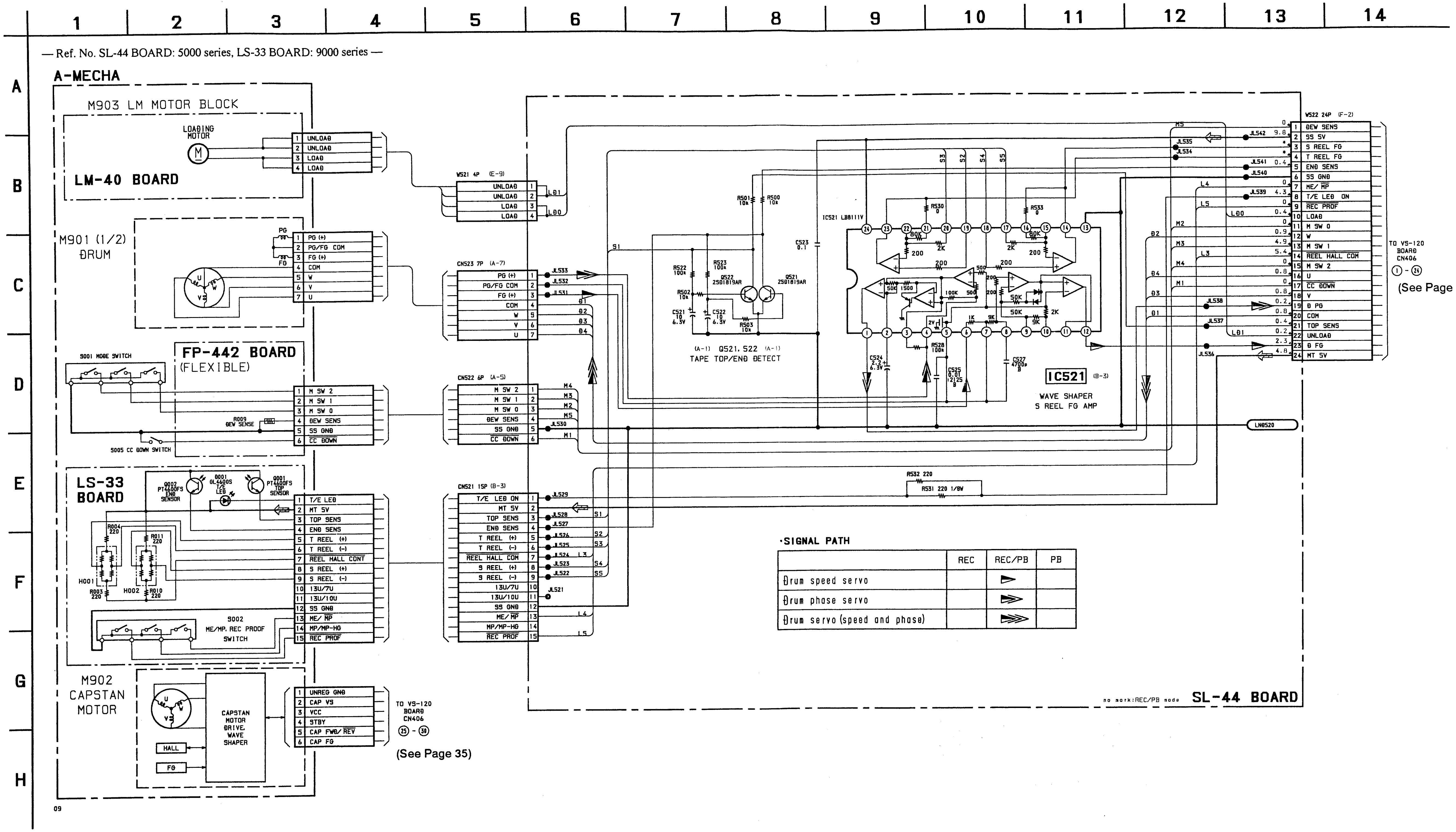

D
E
F
JL569
JL568
JL566
JL563
JL562
JL567
JL565
JL574
JL579
JL582
JL575
JL581
JL580
JL570
JL564
JL578
JL577
JL576
JL561
JL571
JL572
JL573
24
1
1-652-588-
21
09
1
2
3
4
5
6
7
8
9

- Printed wiring boards of FP-442, LM-40 and LS-33 boards are omitted.


SW-223
(STANDBY, START/STOP Switch)
PUSH SWITCH (ZOOM)
LS-33
(Tape Sensor)
VF-42
(View Finder)
JK-99
(Video/Audio Jack)
VC-153
(Camera, Lens Drive)
CD-124
(CCD Imager)
VS-120
(REC/PB Head Amplifier, Video, Servo, System Control)

SL-44 (MECHA CONTROL), FP-442 (MODE SWITCH), LM-40 (LOADING MOTOR), LS-33 (TAPE SENSOR) SCHEMATIC DIAGRAM

( ): The pages above correspond to CCD-TR350E SUPPLEMENT-1.



1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H
— Ref. No. SL-44 BOARD: 5000 series, LS-33 BOARD: 9000 series —
A-MECHA
M903 LM MOTOR BLOCK
LOADING MOTOR
LM-40 BOARD
UNLOAD
UNLOAD
LOAD
LOAD
M901 (1/2) DRUM
PG
FG
PG (+)
PG/FG COM
FG (+)
COM
W
V
U
S001 MODE SWITCH
FP-442 BOARD (FLEXIBLE)
M SW 2
M SW 1
M SW 0
DEW SENS
SS GND
CC DOWN
R009 DEW SENSE
S005 CC DOWN SWITCH
LS-33 BOARD
Q002 PT4600FS END SENSOR
D001 GL4400S T/E LED
Q001 PT4600FS TOP SENSOR
T/E LED
MT 5V
TOP SENS
END SENS
T REEL (+)
T REEL (-)
REEL HALL CONT
S REEL (+)
S REEL (-)
13U/7U
13U/10U
SS GND
ME/MP
MP/MP-HG
REC PROF
H001
H002
R003 220
R004 220
R010 220
R011 220
S002 ME/MP, REC PROOF SWITCH
M902 CAPSTAN MOTOR
CAPSTAN MOTOR DRIVE, WAVE SHAPER
HALL
FG
UNREG GND
CAP VS
VCC
STBY
CAP FWD/REV
CAP FG
TO VS-120 BOARD CN406 ㉕-㉚
(See Page 35)
W521 4P (E-9)
CN523 7P (A-7)
CN522 6P (A-5)
CN521 15P (B-3)
T/E LED ON
REEL HALL COM
13U/7U
13U/10U
REC PROF
Q521, 522 (A-1) TAPE TOP/END DETECT
Q521 2SD1819AR
Q522 2SD1819AR
IC521 LB8111V
IC521 (B-3)
WAVE SHAPER S REEL FG AMP
R532 220
R531 220 1/8W
LND520
W522 24P (F-2)
DEW SENS
SS 5V
S REEL FG
T REEL FG
END SENS
SS GND
ME/MP
T/E LED ON
REC PROF
LOAD
M SW 0
W
M SW 1
REEL HALL COM
M SW 2
U
CC DOWN
V
D PG
COM
TOP SENS
UNLOAD
D FG
MT 5V
TO VS-120 BOARD CN406 ①-㉔
(See Page 35)
no mark:REC/PB mode
SL-44 BOARD
09

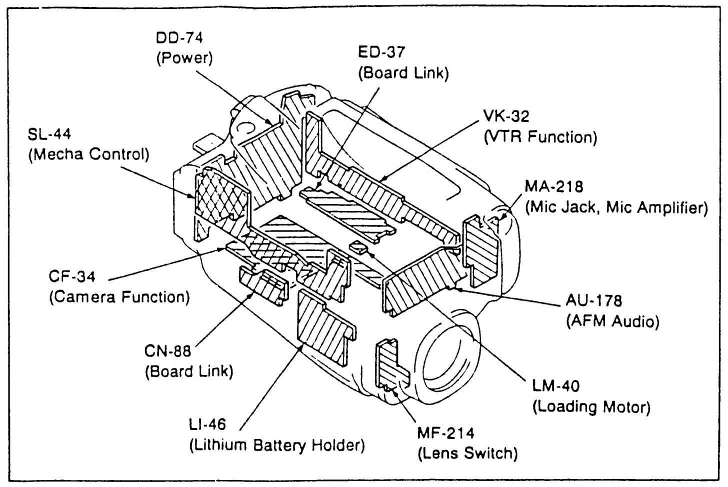
·SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▻	
Drum phase servo		▻▻	
Drum servo (speed and phase)		▻▻▻	

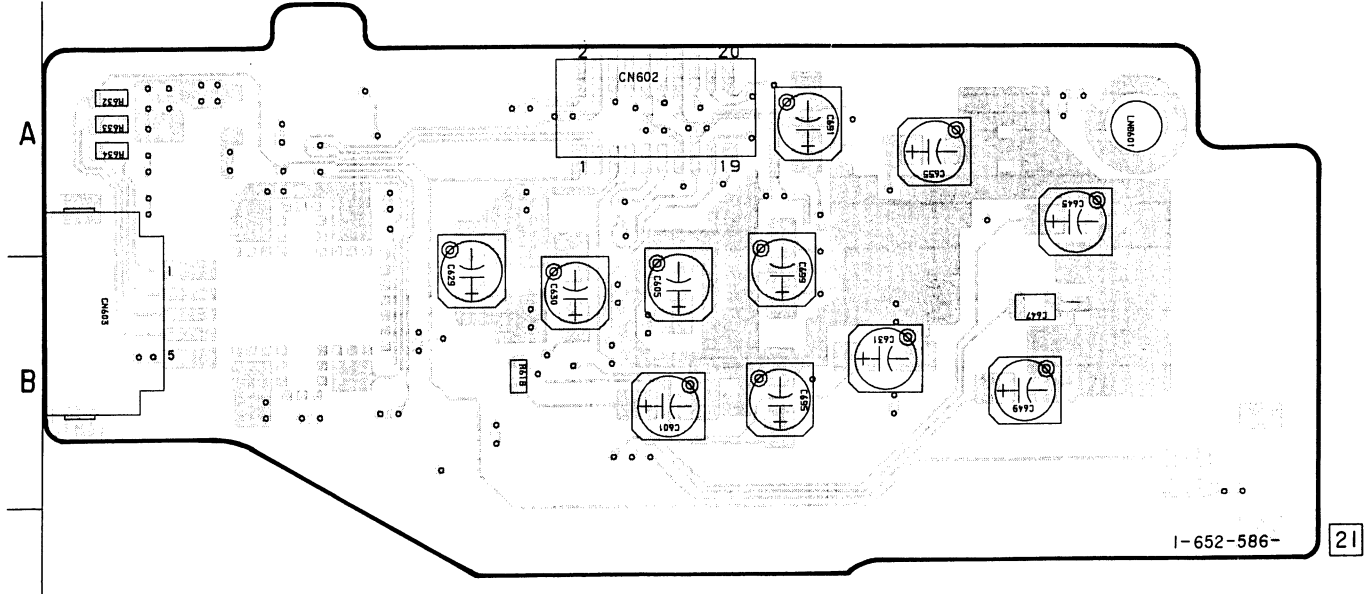
- Printed wiring boards of FP-442, LM-40 and LS-33 boards are omitted.

AU-178 (AFM AUDIO), MA-218 (MIC JACK, MIC AMPLIFIER) PRINTED WIRING BOARDS

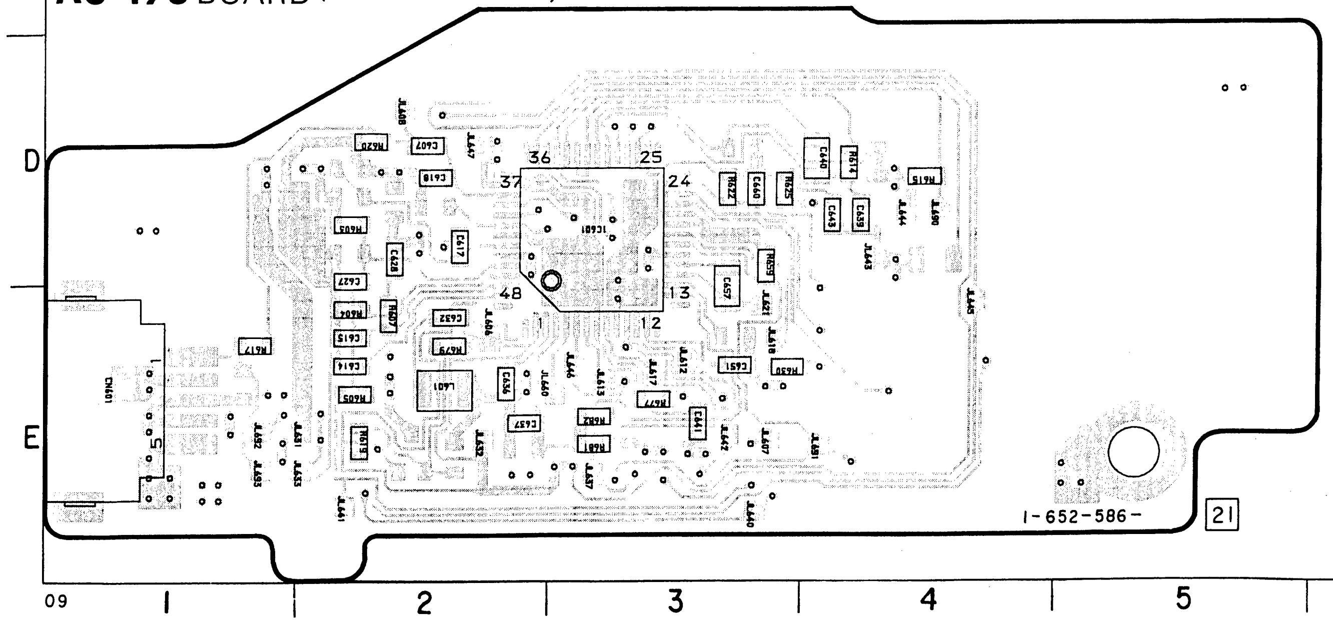
— Ref. No. AU-178, MA-218 BOARDS: 2000 series —


DD-74
(Power)
ED-37
(Board Link)
VK-32
(VTR Function)
SL-44
(Mecha Control)
MA-218
(Mic Jack, Mic Amplifier)
CF-34
(Camera Function)
AU-178
(AFM Audio)
CN-88
(Board Link)
LM-40
(Loading Motor)
LI-46
(Lithium Battery Holder)
MF-214
(Lens Switch)

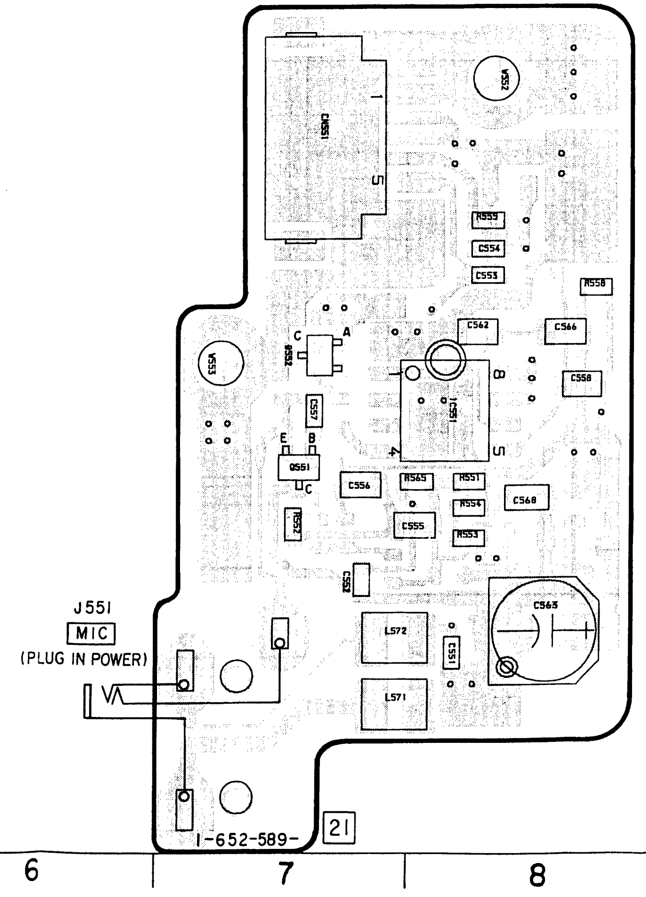
AU-178 BOARD (COMPONENT SIDE)


A
B
C
CN602
2
20
1
19
CN603
1-652-586-
21

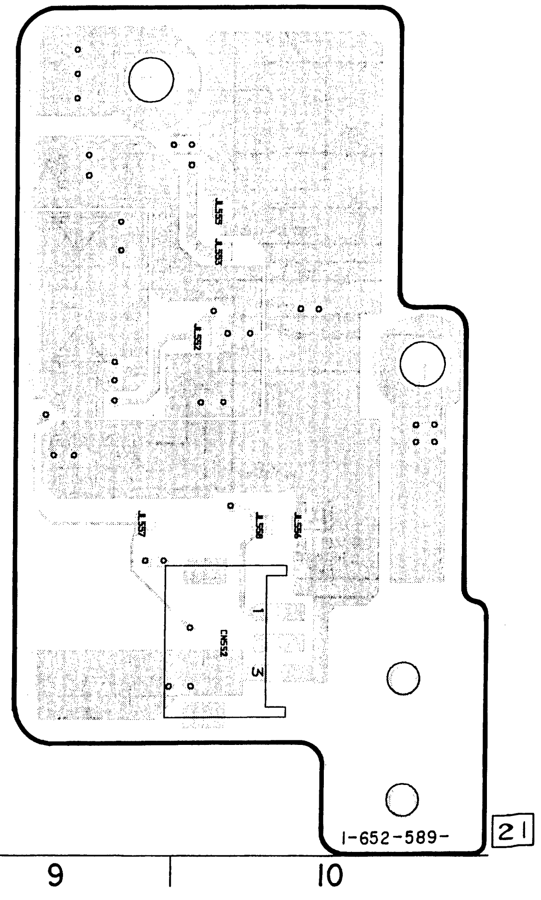
AU-178 BOARD (CONDUCTOR SIDE)


D
E
IC601
36
25
37
24
48
13
1
12
CN601
1-652-586-
21
09
1
2
3
4
5

MA-218 BOARD (COMPONENT SIDE)


CN551
J551
MIC
(PLUG IN POWER)
IC551
Q551
Q552
C565
L571
L572
1-652-589-
21
6
7
8

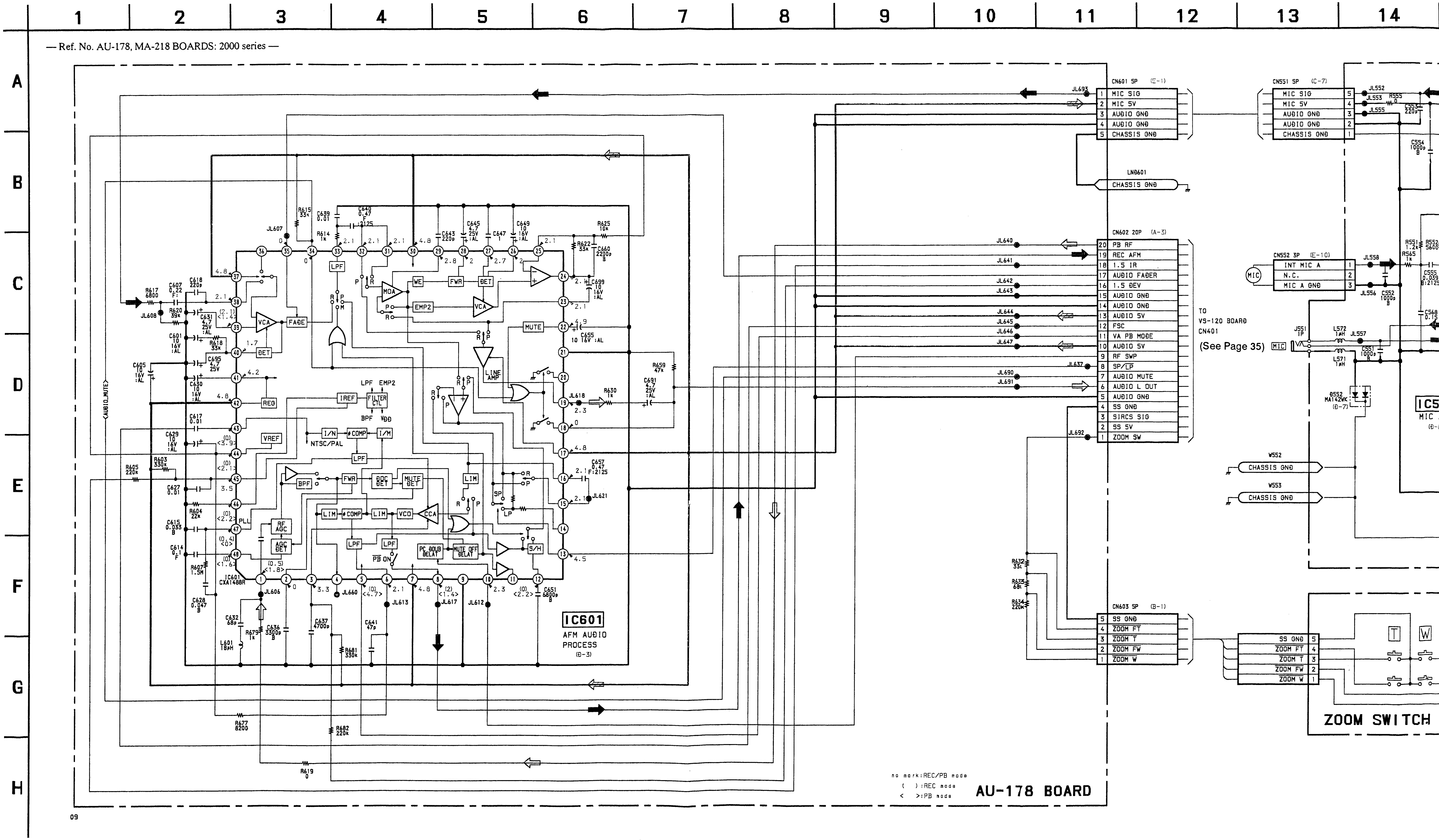
MA-218 BOARD (CONDUCTOR SIDE)


CN552
1-652-589-
21
9
10

AU-178 (AFM AUDIO), MA-218 (MIC JACK, MIC AMPLIFIER) SCHEMATIC DIAGRAM

( ): The pages above correspond to CCD-TR350E SUPPLEMENT-1.

— Ref. No. AU-178, MA-218 BOARDS: 2000 series —



1
2
3
4
5
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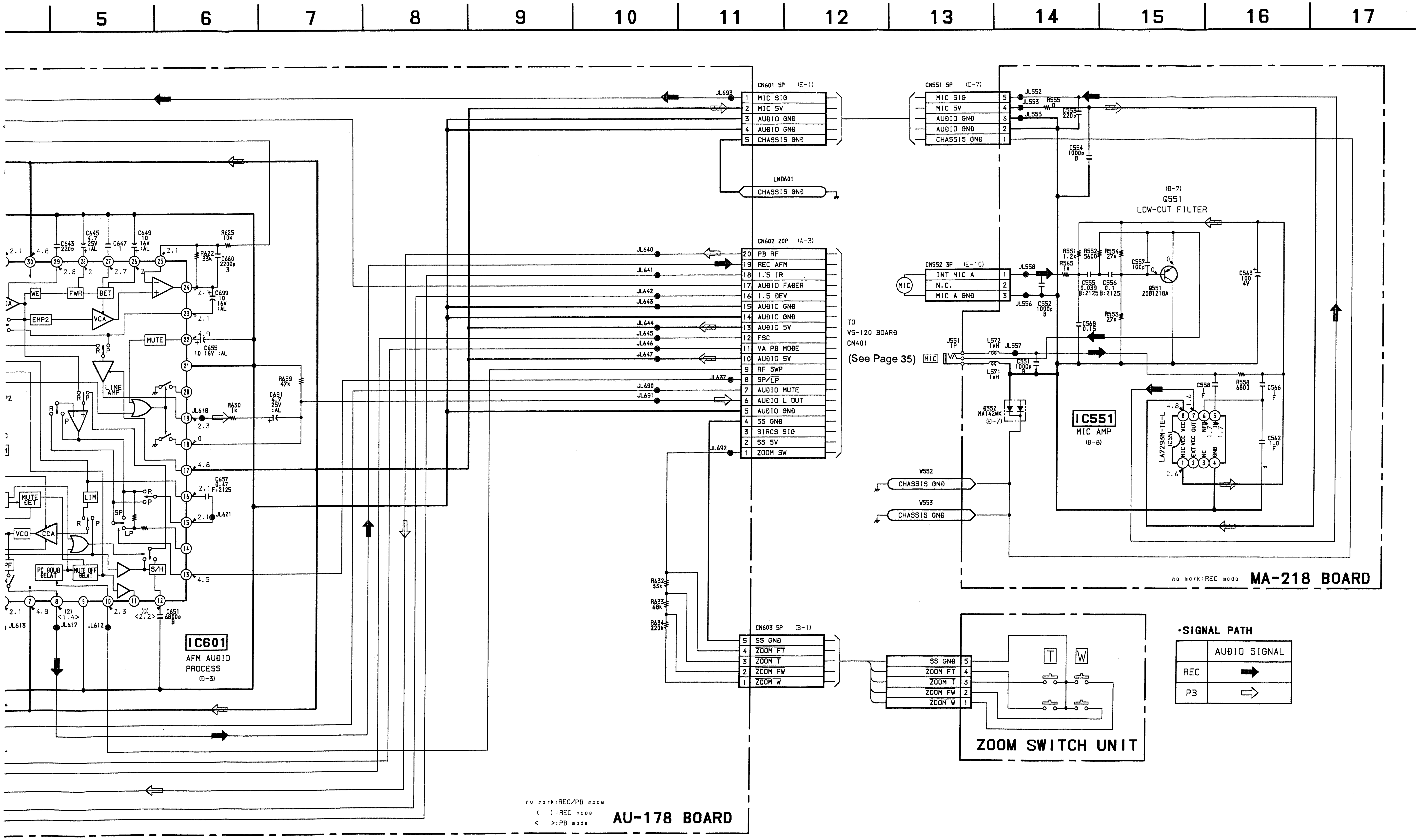
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H
IC601
AFM AUDIO
PROCESS
(B-3)
IC601
CXA1488R
VCA
FADE
DET
REG
VREF
IREF
FILTER CTL
LPF EMP2
BPF VDD
I/N
COMP
NTSC/PAL
LPF
BPF
FWR
DOC DET
MUTE DET
LIM
VCO
CCA
RF AGC
AGC DET
PB ON
PC DOUB DELAY
MUTE OFF DELAY
S/H
MOA
WE
FWR
EMP2
MUTE
LINE AMP
PLL
SP
LP
<AUDIO_MUTE>
CN601 5P (E-1)
1 MIC SIG
2 MIC 5V
3 AUDIO GND
4 AUDIO GND
5 CHASSIS GND
LND601
CHASSIS GND
CN602 20P (A-3)
20 PB RF
19 REC AFM
18 1.5 IR
17 AUDIO FADER
16 1.5 DEV
15 AUDIO GND
14 AUDIO GND
13 AUDIO 5V
12 FSC
11 VA PB MODE
10 AUDIO 5V
9 RF SWP
8 SP/LP
7 AUDIO MUTE
6 AUDIO L OUT
5 AUDIO GND
4 SS GND
3 SIRCS SIG
2 SS 5V
1 ZOOM SW
TO
VS-120 BOARD
CN401
(See Page 35)
CN603 5P (B-1)
5 SS GND
4 ZOOM FT
3 ZOOM T
2 ZOOM FW
1 ZOOM W
CN551 5P (C-7)
MIC SIG 5
MIC 5V 4
AUDIO GND 3
AUDIO GND 2
CHASSIS GND 1
CN552 3P (E-10)
INT MIC A 1
N.C. 2
MIC A GND 3
MIC
J551 1P
L572 1µH
L571 1µH
D552 MA142WK (D-7)
W552
CHASSIS GND
W553
CHASSIS GND
SS GND 5
ZOOM FT 4
ZOOM T 3
ZOOM FW 2
ZOOM W 1
T
W
ZOOM SWITCH
IC5
MIC
JL552
JL553
JL555
JL556
JL557
JL558
R555 0
C553 220p
C554 1000p B
R551 1.2k
R552 5600
R565 1k
C555 0.039 B:2125
C552 1000p B
C568 0.15
C551 1000p B
JL693
JL640
JL641
JL642
JL643
JL644
JL645
JL646
JL647
JL637
JL690
JL691
JL692
JL607
JL608
JL618
JL621
JL606
JL660
JL613
JL617
JL612
R617 6800
C607 0.22 F
C618 220p
R620 39k
C631 4.7 25V
R618 33k
C601 10 16V :AL
C695 4.7 25V
C605 10 16V :AL
C630 10 16V :AL
C617 0.01
C629 10 16V :AL
R603 330k
R605 220k
C627 0.01
R604 22k
C615 0.033 B
C614 0.1 F
R607 1.5M
C628 0.047 B
C632 68p
R679 1k
C636 3300p B
L601 18µH
C637 4700p
R681 330k
C641 47p
C651 6800p B
R615 33k
C639 0.01
C640 0.47 F :2125
R614 1k
C643 220p
C645 4.7 25V :AL
C647 1
C649 10 16V :AL
R625 10k
R622 33k
C660 2200p B
C699 10 16V :AL
C655 10 16V :AL
R659 47k
C691 4.7 25V :AL
R630 1k
C657 0.47 F:2125
R632 33k
R633 68k
R634 220k
R677 8200
R682 220k
R619 0
no mark:REC/PB mode
( ) :REC mode
< >:PB mode
AU-178 BOARD

09

SCHEMATIC DIAGRAM

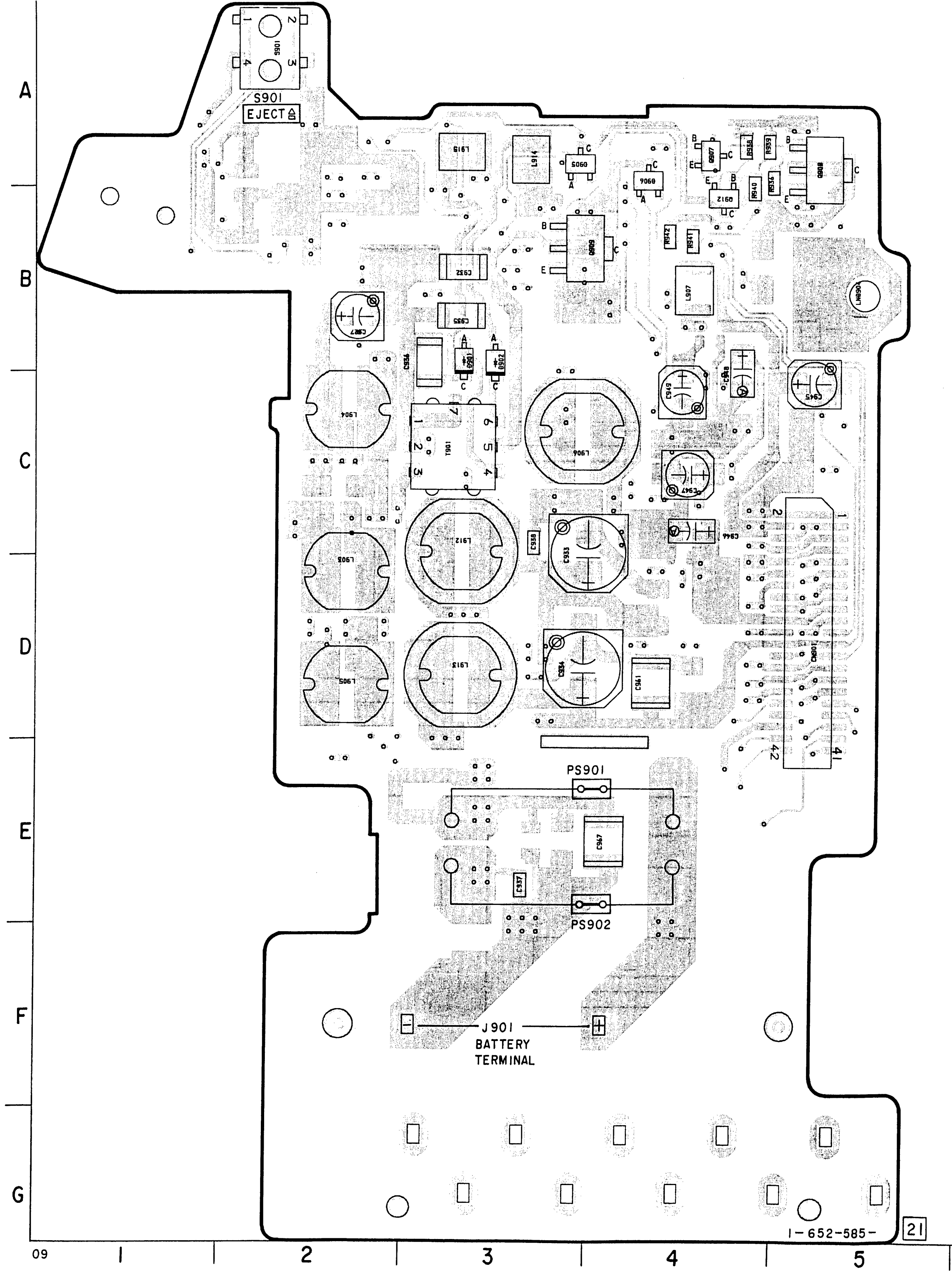
( ): The pages above correspond to CCD-TR350E SUPPLEMENT-1.


5
6
7
8
9
10
11
12
13
14
15
16
17
IC601
AFM AUDIO PROCESS
(D-3)
WE
FWR
DET
EMP2
VCA
MUTE
LINE AMP
MUTE DET
LIM
VCO
CCA
SP
LP
S/H
PC DOUB DELAY
MUTE OFF DELAY
C643 220p
C645 4.7 25V :AL
C647 1
C649 10 16V :AL
R625 10k
R622 33k
C660 2200p B
C699 10 16V :AL
C655 10 16V :AL
R659 47k
C691 4.7 25V :AL
R630 1k
JL618
C657 0.47 F:2125
JL621
C651 6800p B
JL613
JL617
JL612
CN601 5P (E-1)
MIC SIG
MIC 5V
AUDIO GND
AUDIO GND
CHASSIS GND
JL693
LN8601
CHASSIS GND
CN602 20P (A-3)
PB RF
REC AFM
1.5 IR
AUDIO FADER
1.5 DEV
AUDIO GND
AUDIO GND
AUDIO 5V
FSC
VA PB MODE
AUDIO 5V
RF SWP
SP/LP
AUDIO MUTE
AUDIO L OUT
AUDIO GND
SS GND
SIRCS SIG
SS 5V
ZOOM SW
JL640
JL641
JL642
JL643
JL644
JL645
JL646
JL647
JL637
JL690
JL691
JL692
TO VS-120 BOARD CN401
(See Page 35)
R632 33k
R633 68k
R634 220k
CN603 5P (B-1)
SS GND
ZOOM FT
ZOOM T
ZOOM FW
ZOOM W
no mark:REC/PB mode
( ):REC mode
< >:PB mode
AU-178 BOARD
CN551 5P (C-7)
MIC SIG
MIC 5V
AUDIO GND
AUDIO GND
CHASSIS GND
JL552
JL553
R555 0
JL555
C553 220p
C554 1000p B
(B-7)
Q551
LOW-CUT FILTER
CN552 3P (E-10)
INT MIC A
N.C.
MIC A GND
MIC
JL558
JL556
C552 1000p B
R551 1.2k
R552 5600
R554 27k
R565 1k
C557 100p
C555 0.039 B:2125
C556 0.1 B:2125
Q551 2SB1218A
R553 27k
C568 0.15
C563 100 4V
J551 1P
MIC
L572 1μH
JL557
L571 1μH
C551 1000p B
D552 MA142WK (D-7)
IC551
MIC AMP
(B-8)
LA7293M-TE-L
C558 1 F
R558 6800
C566 1 F
C562 1.0 F
MIC VCC
EXT VCC
NC
GND
VCC
OUT
NFB
WS52
CHASSIS GND
WS53
CHASSIS GND
no mark:REC mode
MA-218 BOARD
SS GND
ZOOM FT
ZOOM T
ZOOM FW
ZOOM W
T
W
ZOOM SWITCH UNIT
•SIGNAL PATH
AUDIO SIGNAL
REC
PB

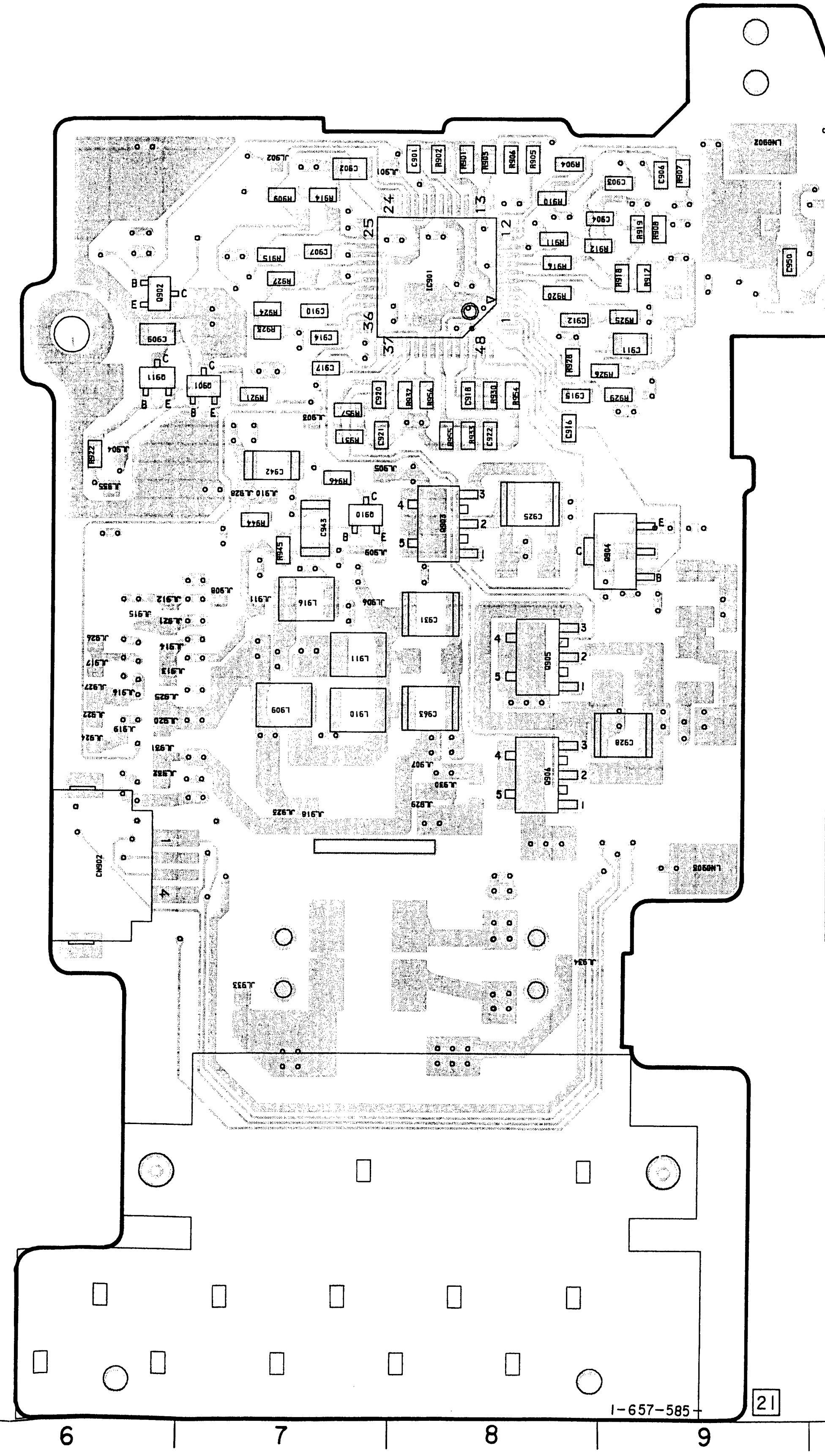
DD-74 (POWER) PRINTED WIRING BOARD

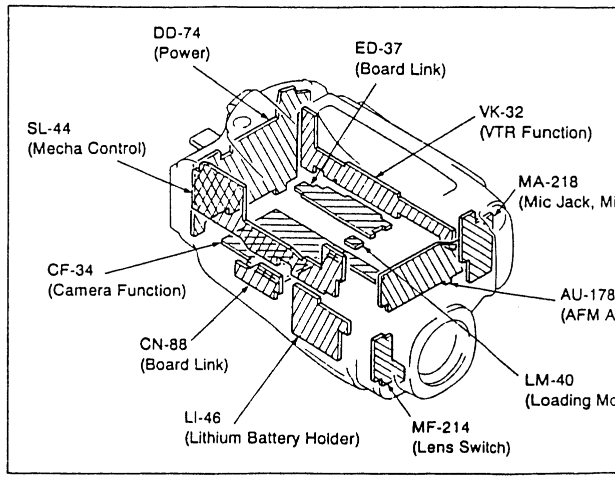
— Ref. No. DD-74 BOARD: 1000 series —

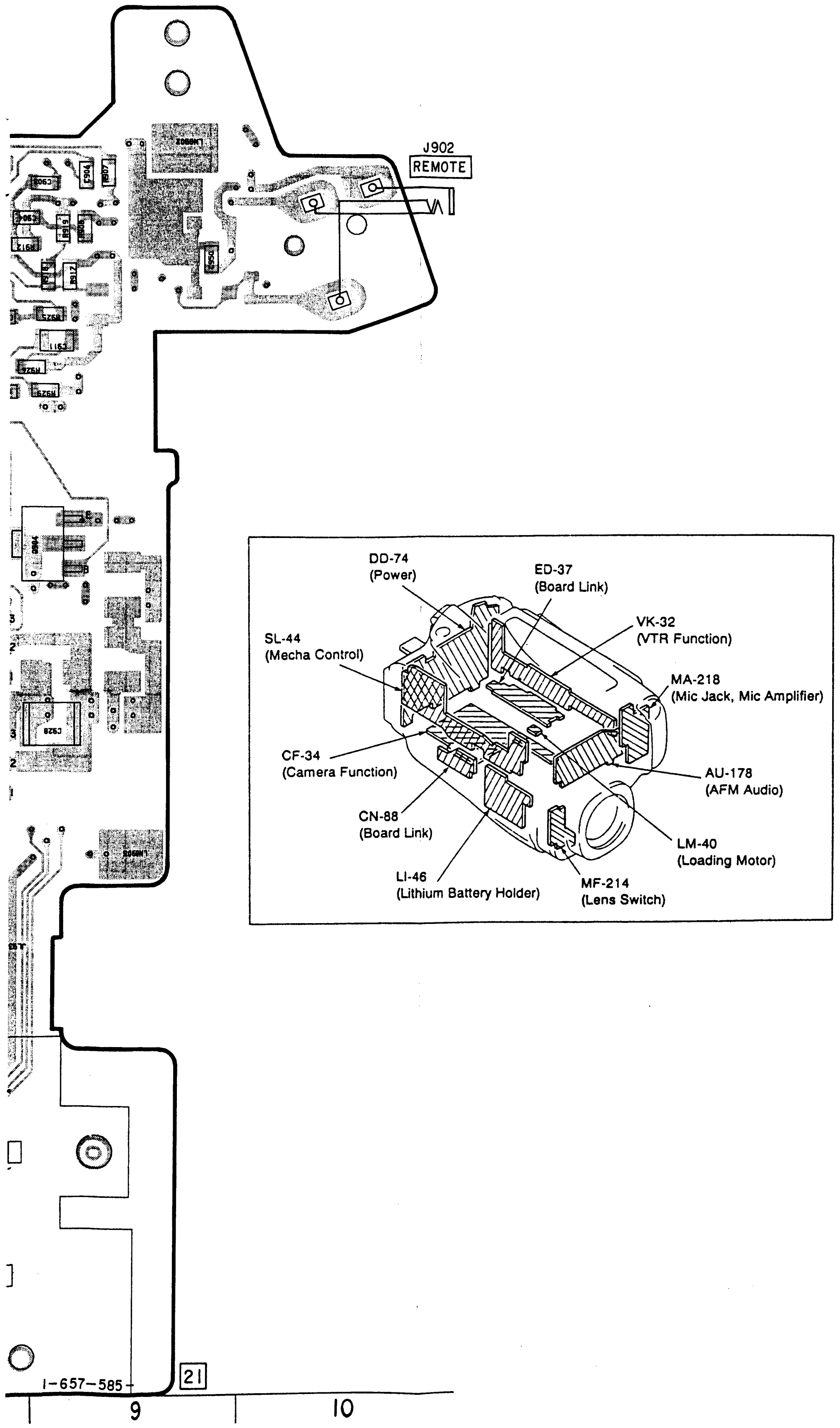
DD-74 BOARD (COMPONENT SIDE)


S901
EJECT
PS901
PS902
J901
BATTERY
TERMINAL
1-652-585-
21
A
B
C
D
E
F
G
09
1
2
3
4
5

DD-74 BOARD (CONDUCTOR SIDE)


J902
REMOTE
1-657-585-
21
6
7
8
9
10


DD-74
(Power)
ED-37
(Board Link)
SL-44
(Mecha Control)
VK-32
(VTR Function)
MA-218
(Mic Jack, Mi
CF-34
(Camera Function)
AU-178
(AFM A
CN-88
(Board Link)
LM-40
(Loading Mo
LI-46
(Lithium Battery Holder)
MF-214
(Lens Switch)


J902
REMOTE
DD-74
(Power)
ED-37
(Board Link)
SL-44
(Mecha Control)
VK-32
(VTR Function)
MA-218
(Mic Jack, Mic Amplifier)
CF-34
(Camera Function)
AU-178
(AFM Audio)
CN-88
(Board Link)
LM-40
(Loading Motor)
LI-46
(Lithium Battery Holder)
MF-214
(Lens Switch)
1-657-585
21
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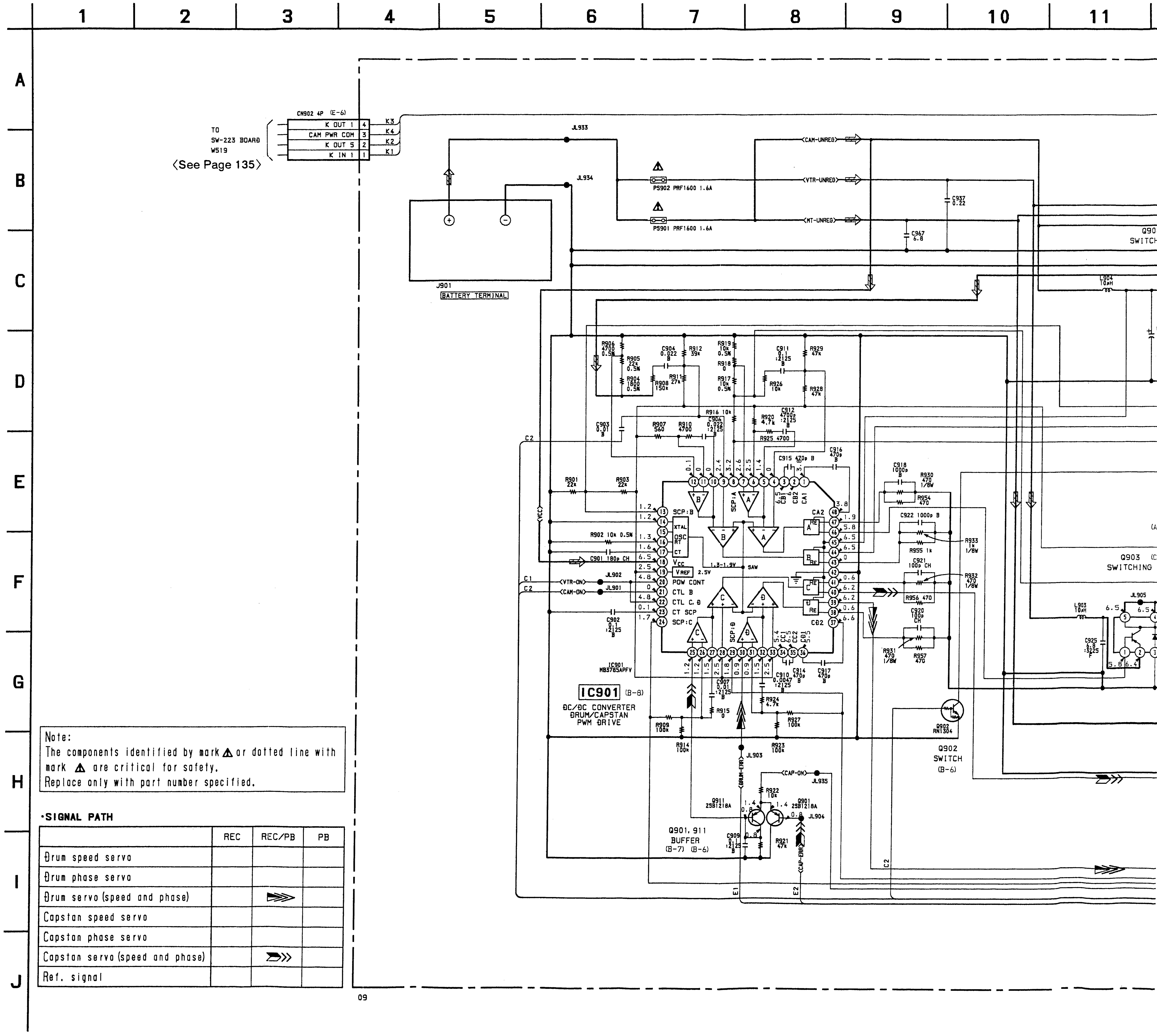
DD-74 (POWER) SCHEMATIC DIAGRAM

< >: The pages above correspond to SERVICE MANUAL (Original).
( ): The pages above correspond to CCD-TR350E SUPPLEMENT-1.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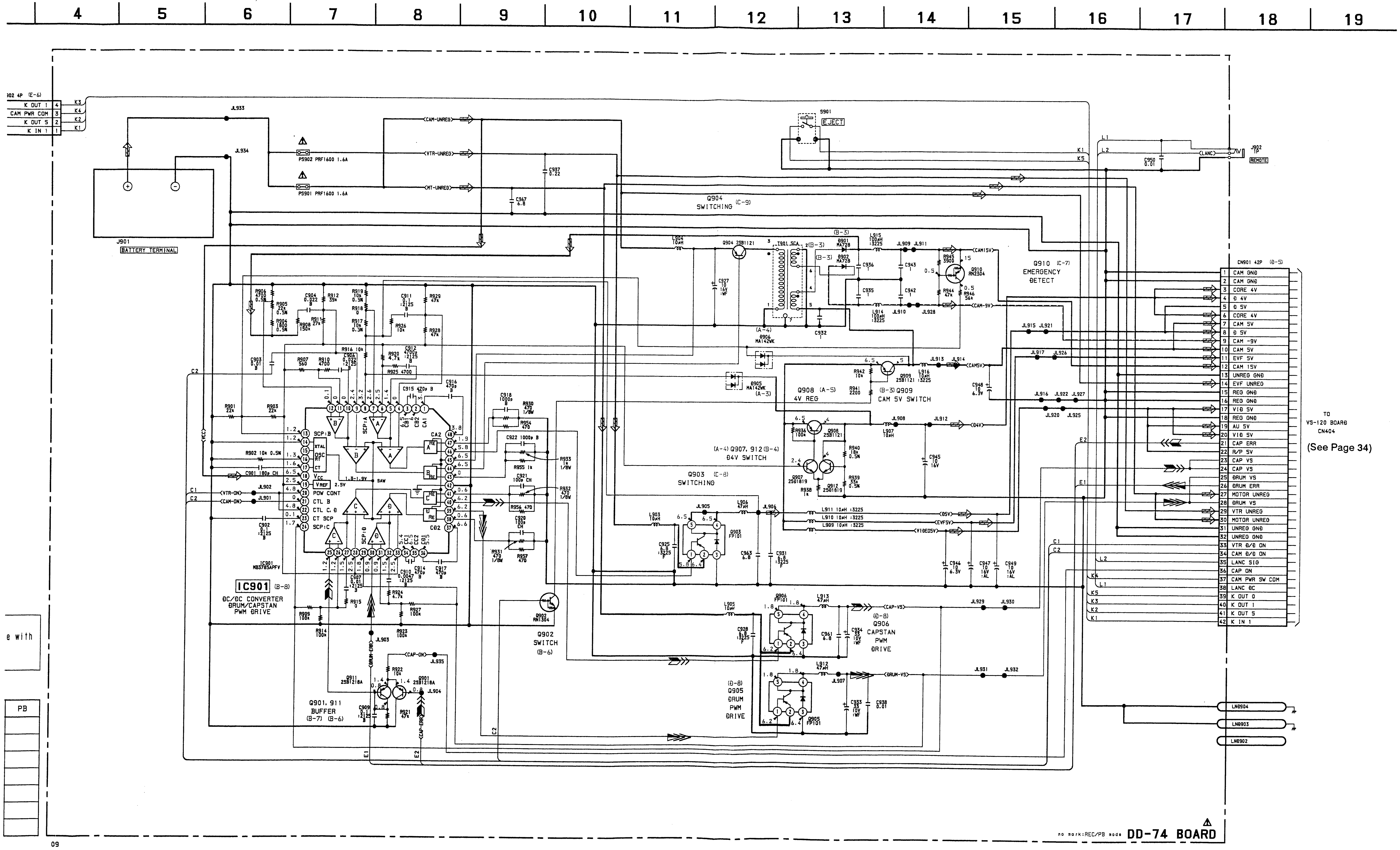
A
B
C
D
E
F
G
H
I
J
TO
SW-223 BOARD
W519
〈See Page 135〉
CN902 4P (E-6)
K OUT 1
CAM PWR COM
K OUT 5
K IN 1
K3
K4
K2
K1
JL933
JL934
J901
BATTERY TERMINAL
PS902 PRF1600 1.6A
PS901 PRF1600 1.6A
<CAM-UNREG>
<VTR-UNREG>
<MT-UNREG>
C937 0.22
C967 6.8
Q90
SWITCH
L904 10μH
C2
C1
<VTR-ON>
<CAM-ON>
<VCC>
JL902
JL901
R906 4700 0.5%
R905 22k 0.5%
R904 1800 0.5%
R908 150k
R911 27k
C904 0.022 B
R912 39k
R919 10k 0.5%
R918 0
R917 10k 0.5%
C911 0.1 :2125
R929 47k
R926 10k
R928 47k
R916 10k
C906
R920 4.7k
C912 4700p :2125 B
R925 4700
C903 0.01 B
R907 560
R910 4700
C915 470p B
C916 470p B
R901 22k
R903 22k
R902 10k 0.5%
C901 180p CH
C902 0.1 :2125 B
SCP:B
XTAL
OSC
RT
CT
Vcc
VREF 2.5V
POW CONT
CTL B
CTL C, D
CT SCP
SCP:C
SCP:D
SCP:A
CA2
CA1
CB2
CB1
CC1
CC2
CD1
CD2
SAW
C918 1000p B
R930 470 1/8W
R954 470
C922 1000p B
R933 1k 1/8W
R955 1k
C921 100p CH
R932 470 1/8W
R956 470
C920 100p CH
R931 470 1/8W
R957 470
Q903
SWITCHING
L903 10μH
JL905
C925 6.8 :3225 F
IC901
MB3785APFV
IC901 (B-8)
DC/DC CONVERTER
DRUM/CAPSTAN
PWM DRIVE
C907 0.01 :2125 B
R915 0
C910 0.0047 :2125 B
C914 470p B
C917 470p B
R924 4.7k
R927 100k
R909 100k
R914 100k
R923 100k
JL903
<DRUM-ERR>
<CAP-ON>
JL935
R922 10k
Q911 2SB1218A
Q901 2SB1218A
JL904
Q901, 911
BUFFER
(B-7) (B-6)
C909 0.1 :2125 B
R921 47k
<CAP-ERR>
Q902 RN1304
Q902
SWITCH
(B-6)
E1
E2
09

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

·SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)		➠	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)		⯈»	
Ref. signal			

< >: The pages above correspond to SERVICE MANUAL (Original).
( ): The pages above correspond to CCD-TR350E SUPPLEMENT-1.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14
15
16
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18
19
J901
BATTERY TERMINAL
PS902 PRF1600 1.6A
PS901 PRF1600 1.6A
<CAM-UNREG>
<VTR-UNREG>
<MT-UNREG>
C937 0.22
C967 6.8
Q904 SWITCHING (C-9)
S901 EJECT
J902 REMOTE
<LANC>
C950 0.01
Q910 (C-7) EMERGENCY DETECT
<CAM15V>
<CAM-9V>
<CAM5V>
<D4V>
<D5V>
<EVF5V>
<VIDEO5V>
<CAP-VS>
<DRUM-VS>
<CAP-ON>
<VTR-ON>
<CAM-ON>
Q908 (A-5) 4V REG
(B-3) Q909 CAM 5V SWITCH
(A-4) Q907, 912 (B-4) D4V SWITCH
Q903 (C-8) SWITCHING
IC901 (B-8) DC/DC CONVERTER DRUM/CAPSTAN PWM DRIVE
IC901 MB3785APFV
Q902 SWITCH (B-6)
Q901, 911 BUFFER (B-7) (B-6)
(D-8) Q906 CAPSTAN PWM DRIVE
(D-8) Q905 DRUM PWM DRIVE
K OUT 1
CAM PWR COM
K OUT 5
K IN 1
CN901 42P (D-5)
1 CAM GND
2 CAM GND
3 CORE 4V
4 D 4V
5 D 5V
6 CORE 4V
7 CAM 5V
8 D 5V
9 CAM -9V
10 CAM 5V
11 EVF 5V
12 CAM 15V
13 UNREG GND
14 EVF UNREG
15 REG GND
16 REG GND
17 VID 5V
18 REG GND
19 AU 5V
20 VID 5V
21 CAP ERR
22 R/P 5V
23 CAP VS
24 CAP VS
25 DRUM VS
26 DRUM ERR
27 MOTOR UNREG
28 DRUM VS
29 VTR UNREG
30 MOTOR UNREG
31 UNREG GND
32 UNREG GND
33 VTR D/D ON
34 CAM D/D ON
35 LANC SIG
36 CAP ON
37 CAM PWR SW COM
38 LANC DC
39 K OUT 0
40 K OUT 1
41 K OUT 5
42 K IN 1
TO VS-120 BOARD CN404
LND904
LND903
LND902
PB
09
no mark:REC/PB mode
DD-74 BOARD

(See Page 34)

SECTION 5
EXPLODED VIEWS

NOTE:

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Page		FORMER		NEW	
	Ref. No.	Part No.	Description	Part No.	Description
139	17	* A-7063-979-A	MA-206PLL BOARD, COMPLETE	* A-7066-234-A	MA-218P BOARD, COMPLETE
140	51	* A-7072-008-A	CN-84PLL BOARD, COMPLETE	* A-7072-099-A	CN-88P BOARD, COMPLETE
141	101	⚠* A-7063-977-A	DD-67PLL BOARD, COMPLETE	⚠* A-7066-230-A	DD-74P BOARD, COMPLETE
	110	* A-7063-973-A	CD-116PLL BOARD, COMPLETE	* A-7066-232-A	CD-124P BOARD, COMPLETE
	117	* A-7063-975-A	VC-147PLL BOARD, COMPLETE	* A-7066-228-A	VC-153P BOARD, COMPLETE
	118	* A-7063-974-A	VS-116PLL BOARD, COMPLETE	* A-7066-227-A	VS-120P BOARD, COMPLETE
	121	* A-7063-978-A	AU-171PLL BOARD, COMPLETE	* A-7066-231-A	AU-178P BOARD, COMPLETE
	124	* A-7063-976-A	SL-41PLL BOARD, COMPLETE	* A-7066-233-A	SL-44P BOARD, COMPLETE

AU-178P **CD-124P**

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Hardware (# mark) list is given in the last of this parts list.

- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA..., uPA...: μPA..., uPB...: μPB..., uPC...: μPC..., uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

Ref. No.	Part No.	Description				Remark
*	A-7066-231-A	AU-178P BOARD, COMPLETE				
		************************				
		(Ref. No. 2,000 Series)				
		< CAPACITOR >				
C601	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C605	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C607	1-165-128-11	CERAMIC CHIP	0.22uF		16V	
C614	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C615	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V	
C617	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C618	1-162-957-11	CERAMIC CHIP	220PF	5%	50V	
C627	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C628	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C629	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C630	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C631	1-128-006-11	ELECT CHIP	4.7uF	20%	25V	
C632	1-162-925-11	CERAMIC CHIP	68PF	5%	50V	
C636	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V	
C637	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C639	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C640	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C641	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	
C643	1-162-957-11	CERAMIC CHIP	220PF	5%	50V	
C645	1-128-006-11	ELECT CHIP	4.7uF	20%	25V	
C647	1-164-346-11	CERAMIC CHIP	1uF		16V	
C649	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C651	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V	
C655	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C657	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C660	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V	
C691	1-128-006-11	ELECT CHIP	4.7uF	20%	25V	
C695	1-128-006-11	ELECT CHIP	4.7uF	20%	25V	
C699	1-128-004-11	ELECT CHIP	10uF	20%	16V	
		< CONNECTOR >				
CN601	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P				
CN602	1-573-338-11	CONNECTOR, BOARD TO BOARD 20P				
CN603	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P				
		< IC >				
IC601	8-759-823-19	IC CXA1488R (AFM AUDIO PROCESS)				

Ref. No.	Part No.	Description				Remark
		< COIL >				
L601	1-412-954-11	INDUCTOR	18uH			
		< RESISTOR >				
R603	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R604	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R605	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R607	1-216-859-11	METAL GLAZE	1.5M	5%	1/16W	
R614	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R615	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R617	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R618	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R619	1-216-864-11	METAL CHIP	0	5%	1/16W	
R620	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R622	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R625	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R630	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R632	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R633	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R634	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R659	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R677	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R679	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R681	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R682	1-216-849-11	METAL CHIP	220K	5%	1/16W	
**						
*	A-7066-232-A	CD-124P BOARD, COMPLETE				
		************************				
		(Ref. No. 1,000 Series)				
		< CAPACITOR >				
C875	1-107-682-11	CERAMIC CHIP	1uF	10%	16V	
C876	1-128-008-11	ELECT CHIP	3.3uF	20%	35V	
C877	1-128-008-11	ELECT CHIP	3.3uF	20%	35V	
C879	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C880	1-135-091-91	TANTAL. CHIP	1uF	20%	16V	
C881	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C882	1-126-205-11	ELECT CHIP	47uF	20%	6.3V	
C883	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C884	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C888	1-107-682-11	CERAMIC CHIP	1uF	10%	16V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN875	1-573-308-11	CONNECTOR, BOARD TO BOARD 16P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D875	8-719-027-48	DIODE MA142WA	
D876	8-719-800-76	DIODE 1SS226	
D877	8-719-027-48	DIODE MA142WA	

< IC >

Ref. No.	Part No.	Description	Remark
IC875	A-7030-369-A	CCD BLOCK ASSY (ICX055AK-1)(CCD IMAGER)	

< COIL >

Ref. No.	Part No.	Description	Remark
L875	1-412-032-11	INDUCTOR CHIP 100uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q875	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q876	8-729-427-72	TRANSISTOR XP4501	
Q877	8-729-232-86	TRANSISTOR 2SK1875-BL/V	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R877	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R878	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R879	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R880	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R881	1-216-819-11	METAL CHIP 680 5% 1/16W	
R882	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R883	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R884	1-216-850-11	METAL CHIP 270K 5% 1/16W	
R885	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R886	1-216-809-11	METAL CHIP 100 5% 1/16W	
R887	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	

****

* A-7072-099-A CN-88P BOARD, COMPLETE

(Ref. No. 6,000 Series)

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN518	1-573-310-11	CONNECTOR, BOARD TO BOARD 20P	

< FLAT CABLE >

Ref. No.	Part No.	Description	Remark
W991	1-696-483-11	CABLE, FLAT (FFC-86)	

****

⚠* A-7066-230-A DD-74P BOARD, COMPLETE

(Ref. No. 1,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C901	1-164-218-11	CERAMIC CHIP 180PF 0.25PF 50V	
C902	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C903	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C904	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C906	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C907	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C909	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C910	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	
C911	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C912	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	
C914	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C915	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C916	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C917	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C918	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C920	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C921	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C922	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C925	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C927	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C928	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C931	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C932	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C933	1-128-530-11	ELECT CHIP 33uF 20% 10V	
C934	1-128-530-11	ELECT CHIP 33uF 20% 10V	
C935	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C936	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C937	1-165-128-11	CERAMIC CHIP 0.22uF 16V	
C938	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C942	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C943	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C945	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C946	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C947	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C948	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C949	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C950	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C961	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C963	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C967	1-165-178-11	CERAMIC CHIP 6.8uF 16V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN901	1-695-324-11	CONNECTOR, BOARD TO BOARD 42P	
CN902	1-573-506-41	CONNECTOR, FPC (NON ZIF) 4P	

Be sure to read "Note on the CCD Imager replacement" on page 4 when changing the CCD imager.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

DD-74P

Ref. No.	Part No.	Description	Remark
		< DIODE >	
D901	8-719-421-27	DIODE MA728	
D902	8-719-421-27	DIODE MA728	
D905	8-719-027-50	DIODE MA142WK	
D906	8-719-027-50	DIODE MA142WK	
		< IC >	
IC901	8-759-060-94	IC MB3785APFV-G-BND-ER (DC/DC CONVERTER DRUM/CAPSTAN PWM DRIVE)	
		< JACK >	
J901	1-537-281-41	TERMINAL BOARD (BATTERY TERMINAL)	
J902	1-565-276-21	JACK, ULTRA SMALL 1P (REMOTE)	
		< COIL >	
L903	1-424-522-21	COIL, CHOKE 10uH	
L904	1-424-522-21	COIL, CHOKE 10uH	
L905	1-424-522-21	COIL, CHOKE 10uH	
L906	1-424-524-21	COIL, CHOKE 47uH	
L907	1-414-267-11	INDUCTOR 10uH	
L909	1-414-267-11	INDUCTOR 10uH	
L910	1-414-267-11	INDUCTOR 10uH	
L911	1-414-267-11	INDUCTOR 10uH	
L912	1-424-524-21	COIL, CHOKE 47uH	
L913	1-424-524-21	COIL, CHOKE 47uH	
L914	1-412-032-11	INDUCTOR CHIP 100uH	
L915	1-412-032-11	INDUCTOR CHIP 100uH	
L916	1-414-267-11	INDUCTOR 10uH	
		< IC LINK >	
⚠PS901	1-532-841-21	LINK, IC (1.6A PRF1600)	
⚠PS902	1-532-841-21	LINK, IC (1.6A PRF1600)	
		< TRANSISTOR >	
Q901	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q902	8-729-905-18	TRANSISTOR DTC144EU	
Q903	8-729-823-82	TRANSISTOR FP101	
Q904	8-729-805-25	TRANSISTOR 2SB1121	
Q905	8-729-823-82	TRANSISTOR FP101	
Q906	8-729-823-82	TRANSISTOR FP101	
Q907	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q908	8-729-805-25	TRANSISTOR 2SB1121	
Q909	8-729-805-25	TRANSISTOR 2SB1121	
Q910	8-729-905-12	TRANSISTOR DTA144EU	
Q911	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q912	8-729-402-32	TRANSISTOR 2SD1819A-R	
		< RESISTOR >	
R901	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R902	1-218-871-11	METAL CHIP 10K 0.50% 1/16W	

Ref. No.	Part No.	Description	Remark
R903	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R904	1-218-853-11	METAL CHIP 1.8K 0.50% 1/16W	
R905	1-218-879-11	METAL CHIP 22K 0.50% 1/16W	
R906	1-218-863-11	METAL CHIP 4.7K 0.50% 1/16W	
R907	1-216-818-11	METAL CHIP 560 5% 1/16W	
R908	1-216-847-11	METAL CHIP 150K 5% 1/16W	
R909	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R910	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R911	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R912	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R914	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R915	1-216-864-11	METAL CHIP 0 5% 1/16W	
R916	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R917	1-218-871-11	METAL CHIP 10K 0.50% 1/16W	
R918	1-216-864-11	METAL CHIP 0 5% 1/16W	
R919	1-218-871-11	METAL CHIP 10K 0.50% 1/16W	
R920	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R921	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R922	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R923	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R924	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R925	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R926	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R927	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R928	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R929	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R930	1-216-817-11	METAL CHIP 470 5% 1/16W	
R931	1-216-817-11	METAL CHIP 470 5% 1/16W	
R932	1-216-817-11	METAL CHIP 470 5% 1/16W	
R933	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R936	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R938	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R939	1-218-883-11	METAL CHIP 33K 0.50% 1/16W	
R940	1-218-877-11	METAL CHIP 18K 0.50% 1/16W	
R941	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R942	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R944	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R945	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R946	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R954	1-216-817-11	METAL CHIP 470 5% 1/16W	
R955	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R956	1-216-817-11	METAL CHIP 470 5% 1/16W	
R957	1-216-817-11	METAL CHIP 470 5% 1/16W	
		< SWITCH >	
S901	1-572-467-21	SWITCH, PUSH (1 KEY)(EJECT)	
		< TRANSFORMER >	
T901	1-450-874-21	TRANSFORMER, DC-DC CONVERTER	

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The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description	Remark
*	A-7066-234-A	MA-218P BOARD, COMPLETE ************************	
		(Ref.No. 2,000 Series)	
		< CAPACITOR >	
C551	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C552	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C553	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C554	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C555	1-162-587-11	CERAMIC CHIP 0.039uF 10% 25V	
C556	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C557	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C558	1-164-346-11	CERAMIC CHIP 1uF 16V	
C562	1-164-346-11	CERAMIC CHIP 1uF 16V	
C563	1-126-209-11	ELECT 100uF 20% 4V	
C566	1-164-346-11	CERAMIC CHIP 1uF 16V	
C568	1-164-492-11	CERAMIC CHIP 0.15uF 10% 16V	
		< CONNECTOR >	
CN551	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	
* CN552	1-580-056-21	PIN, CONNECTOR 3P	
		< DIODE >	
D552	8-719-027-50	DIODE MA142WK	
		< IC >	
IC551	8-759-822-37	IC LA7293M (MIC AMP)	
		< JACK >	
J551	1-568-027-11	JACK, SMALL TYPE 1P (MIC)	
		< COIL >	
L571	1-412-026-11	INDUCTOR CHIP 1uH	
L572	1-412-026-11	INDUCTOR CHIP 1uH	
		< TRANSISTOR >	
Q551	8-729-230-60	TRANSISTOR 2SA1586-YG	
		< RESISTOR >	
R551	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R552	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R553	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R554	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R555	1-216-864-11	METAL CHIP 0 5% 1/16W	
R558	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R565	1-216-821-11	METAL CHIP 1K 5% 1/16W	

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Ref.No.	Part No.	Description	Remark
*	A-7066-233-A	SL-44P BOARD, COMPLETE ***********************	
		(Ref.No. 5,000 Series)	
		< CAPACITOR >	
C521	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C522	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C523	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C524	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C525	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C527	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	
		< CONNECTOR >	
CN521	1-691-482-21	CONNECTOR, FFC/FPC 15P	
CN522	1-691-472-21	CONNECTOR, FFC/FPC 6P	
CN523	1-691-473-21	CONNECTOR, FFC/FPC 7P	
		< IC >	
IC521	8-759-059-09	IC LB8111V (WAVE SHAPER S REEL FG AMP)	
		< TRANSISTOR >	
Q521	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q522	8-729-402-32	TRANSISTOR 2SD1819A-R	
		< RESISTOR >	
R500	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R501	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R502	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R503	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R522	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R523	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R528	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R530	1-216-864-11	METAL CHIP 0 5% 1/16W	
R531	1-216-813-11	METAL CHIP 220 5% 1/16W	
R532	1-216-813-11	METAL CHIP 220 5% 1/16W	
R533	1-216-864-11	METAL CHIP 0 5% 1/16W	
		< FLEXIBLE BOARD >	
W521	1-642-186-11	FP-437 FLEXIBLE BOARD	
W522	1-696-490-11	FP-589 FLEXIBLE BOARD	

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Ref.No.	Part No.	Description	Remark
*	A-7066-228-A	VC-153P BOARD, COMPLETE ************************	
		(Ref.No. 3,000 Series)	
		< CAPACITOR >	
C701	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C702	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	

VC-153P

Ref. No.	Part No.	Description			Remark
C703	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C705	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C706	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C707	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C708	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C709	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C711	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C712	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C713	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C716	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C717	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C718	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C719	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C721	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C722	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C723	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C724	1-164-346-11	CERAMIC CHIP	1uF		16V
C725	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C726	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C727	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C728	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C729	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C730	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C733	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C734	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C735	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C737	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C738	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C739	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C741	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C742	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C749	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C750	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C751	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C752	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C801	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C802	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C803	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C804	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C805	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C806	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C807	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C808	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C809	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C810	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C811	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C813	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C814	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C815	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C817	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

Ref. No.	Part No.	Description			Remark
C818	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C819	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C820	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C821	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C823	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C824	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C826	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C827	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C830	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C832	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C833	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C834	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C835	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C836	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C837	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C838	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C839	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C841	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C851	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C852	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C853	1-164-346-11	CERAMIC CHIP	1uF		16V
C854	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C855	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C857	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C860	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C861	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C862	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C863	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C864	1-164-346-11	CERAMIC CHIP	1uF		16V
C866	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C868	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C869	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C870	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C871	1-164-346-11	CERAMIC CHIP	1uF		16V

< CONNECTOR >

CN701	1-573-372-21	CONNECTOR, BOARD TO BOARD 18P
CN801	1-573-336-11	CONNECTOR, BOARD TO BOARD 16P
CN851	1-573-361-11	CONNECTOR, FFC/FPC 21P

< TRIMMER >

CT801	1-141-356-11	CAP, ADJ

< FILTER >

FL701	1-236-834-21	FILTER, LOW PASS
FL702	1-415-751-21	DELAY LINE, LC (YH)

< IC >

IC701	8-759-243-19	IC TC7SU04F (INVERTER)

Ref.No.	Part No.	Description	Remark
IC702	8-759-064-36	IC MB88346BPFV (D/A CONVERTER (EVR))	
IC703	8-759-710-07	IC NJM2234M (SWITCH)	
IC704	8-752-358-10	IC CXD2101BR (SYNC GENERATOR)	
IC705	8-759-069-18	IC CXD2103AR (OPD)	
IC706	8-752-355-56	IC CXD2104BN-T4 (FOCUS PRE DRIVER)	
IC707	8-752-347-93	IC CXD2100AQ (CAM CORE (DIGITAL CAMERA PROCESS))	
IC709	8-752-840-64	IC CXP80624-434R (CAMERA CONTROL)	
IC712	8-759-159-70	IC BR9021BF (EEP ROM (NON VOLATILE MEMORY))	
IC801	8-752-350-16	IC CXD1257AR (TIMING GENERATOR)	
IC802	8-752-060-50	IC CXA1577R (A/D CONVERTER)	
IC803	8-752-053-26	IC CXA1399Q (A/D BIAS AMP)	
IC804	8-752-327-48	IC CXD1250N (V DRIVE)	
IC805	8-752-054-61	IC CXA1390AR (AGC/IRIS CONTROL SIGNAL SEPARATION)	
IC851	8-759-701-24	IC NJM3414M (ZOOM POS LPS)	
IC852	8-759-060-00	IC LM324DR (HALL GAIN CONT, HALL BIAS CONT, ZOOM REF, IRIS PWM)	
IC853	8-759-058-47	IC MPC1724VM (FOCUS MOTOR DRIVE)	
IC854	8-759-823-51	IC LB1830M (ZOOM MOTOR DRIVE)	
IC856	8-759-998-98	IC LM358D (IRIS DRIVE HALL AMP)	
		< COIL >	
L701	1-414-078-11	INDUCTOR 10uH	
L704	1-414-078-11	INDUCTOR 10uH	
L706	1-414-267-11	INDUCTOR 10uH	
L708	1-412-026-11	INDUCTOR CHIP 1uH	
L711	1-414-267-11	INDUCTOR 10uH	
L714	1-414-078-11	INDUCTOR 10uH	
L715	1-414-267-11	INDUCTOR 10uH	
L717	1-414-078-11	INDUCTOR 10uH	
L720	1-414-078-11	INDUCTOR 10uH	
L721	1-412-962-11	INDUCTOR 82uH	
L801	1-414-078-11	INDUCTOR 10uH	
L802	1-414-078-11	INDUCTOR 10uH	
L803	1-414-078-11	INDUCTOR 10uH	
L804	1-414-267-11	INDUCTOR 10uH	
L853	1-412-032-11	INDUCTOR CHIP 100uH	
		< TRANSISTOR >	
Q701	8-729-907-00	TRANSISTOR DTC114EU	
Q702	8-729-427-74	TRANSISTOR XP4601	
Q703	8-729-427-74	TRANSISTOR XP4601	
Q704	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q706	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q707	8-729-905-96	TRANSISTOR DTA114TU	
Q708	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q709	8-729-427-72	TRANSISTOR XP4501	
Q801	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q802	8-729-427-70	TRANSISTOR XP4401	
Q851	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q852	8-729-907-00	TRANSISTOR DTC114EU	
Q853	8-729-427-70	TRANSISTOR XP4401	
		< RESISTOR >	
R701	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R702	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R703	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R704	1-216-813-11	METAL CHIP 220 5% 1/16W	
R705	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R706	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R707	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R708	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R709	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R710	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R712	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R713	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R714	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R715	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R716	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R718	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R721	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R722	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R723	1-216-296-91	METAL GLAZE 0 5% 1/8W	
R724	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R725	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R727	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R728	1-216-813-11	METAL CHIP 220 5% 1/16W	
R729	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R730	1-216-864-11	METAL CHIP 0 5% 1/16W	
R732	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R733	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R734	1-216-817-11	METAL CHIP 470 5% 1/16W	
R735	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R738	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R739	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R740	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R741	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R742	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R743	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R744	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R745	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R746	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R748	1-216-864-11	METAL CHIP 0 5% 1/16W	
R749	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R750	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R751	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R752	1-216-817-11	METAL CHIP 470 5% 1/16W	
R753	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R754	1-216-821-11	METAL CHIP 1K 5% 1/16W	

Ref.No.	Part No.	Description				Remark
R755	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R756	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R757	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R758	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R760	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R761	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R762	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R763	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R764	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R765	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R766	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R767	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R768	1-216-296-91	METAL GLAZE	0	5%	1/8W	
R769	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R770	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R771	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R775	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R776	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R777	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R778	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R779	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R781	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R782	1-216-813-11	METAL CHIP	220	5%	1/16W	
R783	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R784	1-216-817-11	METAL CHIP	470	5%	1/16W	
R785	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R786	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R787	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R789	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R790	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R791	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R792	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R793	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R794	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R795	1-216-815-11	METAL CHIP	330	5%	1/16W	
R796	1-216-817-11	METAL CHIP	470	5%	1/16W	
R797	1-216-818-11	METAL CHIP	560	5%	1/16W	
R800	1-216-809-11	METAL CHIP	100	5%	1/16W	
R801	1-216-864-11	METAL CHIP	0	5%	1/16W	
R802	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R803	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R804	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R805	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R806	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R807	1-216-817-11	METAL CHIP	470	5%	1/16W	
R808	1-216-801-11	METAL CHIP	22	5%	1/16W	
R809	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R810	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R811	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R812	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	

Ref.No.	Part No.	Description				Remark
R813	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R814	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R815	1-216-864-11	METAL CHIP	0	5%	1/16W	
R816	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R819	1-216-801-11	METAL CHIP	22	5%	1/16W	
R821	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R823	1-218-876-11	METAL CHIP	16K	0.50%	1/16W	
R825	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R826	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R827	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R828	1-218-871-11	METAL CHIP	10K	0.50%	1/16W	
R829	1-218-899-11	METAL CHIP	150K	0.50%	1/16W	
R830	1-218-847-11	METAL CHIP	1K	0.50%	1/16W	
R831	1-216-864-11	METAL CHIP	0	5%	1/16W	
R850	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R851	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R852	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R853	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R854	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R855	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R856	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R857	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R858	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R859	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R860	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R861	1-218-879-11	METAL CHIP	22K	0.50%	1/16W	
R862	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R863	1-216-855-11	METAL CHIP	680K	5%	1/16W	
R864	1-217-671-11	METAL CHIP	1	5%	1/10W	
R865	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R866	1-216-820-11	METAL CHIP	820	5%	1/16W	
R867	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R868	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R869	1-218-881-11	METAL CHIP	27K	0.50%	1/16W	
R870	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R871	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R872	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R873	1-216-813-11	METAL CHIP	220	5%	1/16W	
R874	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R875	1-217-671-11	METAL CHIP	1	5%	1/10W	
R876	1-216-296-91	METAL GLAZE	0	5%	1/8W	

< VIBRATOR >

X701	1-579-553-11	VIBRATOR (12MHz)	
X801	1-579-621-11	VIBRATOR, CRYSTAL (28.375MHz)	

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Ref. No.	Part No.	Description			Remark
*	A-7066-227-A	VS-120P BOARD, COMPLETE			
		************************			
					(Ref. No. 4,000 Series)
	1-691-471-11	CONNECTOR, TRANSLATION 11P			
		< CAPACITOR >			
C001	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C002	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C003	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C004	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C005	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C006	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C009	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C011	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C012	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C013	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C014	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C018	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C019	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C020	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C021	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C022	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C023	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C024	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C026	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C027	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C028	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C029	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C035	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C049	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C057	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C058	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C059	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C061	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C063	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C064	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C065	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C066	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C067	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C068	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C069	1-162-922-11	CERAMIC CHIP	39PF	5%	50V
C072	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C073	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C074	1-164-218-11	CERAMIC CHIP	180PF	0.25PF	50V
C075	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C077	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C078	1-162-908-11	CERAMIC CHIP	3PF	0.25PF	50V
C080	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C081	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C082	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C083	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C085	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C086	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C091	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C092	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C121	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C122	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C123	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C124	1-164-346-11	CERAMIC CHIP	1uF		16V
C125	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C126	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C127	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
C128	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C129	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C130	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C132	1-164-383-11	CERAMIC CHIP	110PF	5%	50V
C133	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C135	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C136	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C137	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C150	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C151	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C156	1-162-922-11	CERAMIC CHIP	39PF	5%	50V
C159	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C161	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C167	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C171	1-164-346-11	CERAMIC CHIP	1uF		16V
C173	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C176	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C177	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C178	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
C179	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C180	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C181	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C182	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C187	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C188	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C189	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C192	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C193	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C194	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C199	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C205	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C206	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C207	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C208	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C209	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C213	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C214	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C216	1-128-004-11	ELECT CHIP	10uF	20%	16V

Ref.No.	Part No.	Description			Remark
C217	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C218	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C219	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C220	1-126-246-11	ELECT CHIP	220uF	20%	4V
C221	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C222	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C223	1-128-004-11	ELECT CHIP	10uF	20%	16V
C225	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C226	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C227	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C228	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C229	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C231	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C232	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C233	1-128-004-11	ELECT CHIP	10uF	20%	16V
C234	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C235	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C237	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C238	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C239	1-162-928-11	CERAMIC CHIP	120PF	5%	50V
C240	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C241	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C242	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C245	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C246	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C248	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C249	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C250	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
C255	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C256	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C257	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C259	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C260	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C261	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C262	1-162-928-11	CERAMIC CHIP	120PF	5%	50V
C263	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C264	1-162-924-11	CERAMIC CHIP	56PF	5%	50V
C265	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C266	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C267	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C268	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C269	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C270	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C271	1-128-004-11	ELECT CHIP	10uF	20%	16V
C272	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C273	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C276	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C277	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C278	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C280	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C281	1-135-146-21	TANTALUM CHIP	0.68uF	20%	25V
C282	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C283	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C284	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C285	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C286	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C288	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C289	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C290	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C291	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C292	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C294	1-164-346-11	CERAMIC CHIP	1uF		16V
C295	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C296	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C297	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C298	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C299	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C300	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C301	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C303	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C304	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C306	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C401	1-164-346-11	CERAMIC CHIP	1uF		16V
C403	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C404	1-164-346-11	CERAMIC CHIP	1uF		16V
C405	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C406	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C408	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C409	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C410	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C412	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C413	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C414	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C415	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C416	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C417	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C418	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C420	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C423	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C424	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C425	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C426	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C427	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C428	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C429	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C430	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C431	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C432	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V
C433	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C434	1-162-917-11	CERAMIC CHIP	15PF	5%	50V

Ref. No.	Part No.	Description			Remark
C435	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C436	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C437	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C438	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C439	1-162-907-11	CERAMIC CHIP	2PF	0.25PF	50V
C440	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C441	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C442	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C444	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C446	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C447	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C449	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C452	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C455	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C456	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C457	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C458	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C459	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C460	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C461	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C462	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C463	1-128-004-11	ELECT CHIP	10uF	20%	16V
C464	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C465	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C466	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V
C467	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C468	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V
C469	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C470	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C471	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C472	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C474	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C476	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C477	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C478	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C481	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C482	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C483	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C485	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C487	1-128-004-11	ELECT CHIP	10uF	20%	16V
C488	1-162-927-11	CERAMIC CHIP	100PF	5%	50V

< FILTER >

Ref. No.	Part No.	Description
CF151	1-579-371-11	FILTER, CERAMIC

< CONNECTOR >

Ref. No.	Part No.	Description
CN002	1-569-775-21	PIN, CONNECTOR 5P
CN101	1-566-538-11	CONNECTOR, FPC (NON ZIF) 6P
CN102	1-580-789-21	PIN, CONNECTOR (SMD) 6P
CN401	1-573-310-11	CONNECTOR, BOARD TO BOARD 20P
CN403	1-573-338-11	CONNECTOR, BOARD TO BOARD 20P
CN404	1-695-325-11	CONNECTOR, BOARD TO BOARD 42P
CN406	1-573-343-21	CONNECTOR, BOARD TO BOARD 30P
* CN407	1-580-055-21	PIN, CONNECTOR 2P

< DIODE >

Ref. No.	Part No.	Description	
D001	8-719-800-76	DIODE	1SS226
D121	8-719-027-50	DIODE	MA142WK
D159	8-719-027-50	DIODE	MA142WK
D160	8-719-027-50	DIODE	MA142WK
D161	8-719-027-50	DIODE	MA142WK
D162	8-719-027-50	DIODE	MA142WK
D163	8-719-027-50	DIODE	MA142WK
D401	8-719-421-27	DIODE	MA728
D402	8-719-027-50	DIODE	MA142WK
D403	8-719-421-27	DIODE	MA728
D456	8-719-420-14	DIODE	MA8082-M
D462	8-719-420-14	DIODE	MA8082-M

< FILTER >

Ref. No.	Part No.	Description
FL121	1-236-188-11	FILTER, BAND PASS
FL152	1-236-849-21	FILTER, BAND PASS
FL153	1-236-186-11	FILTER, BAND PASS
FL154	1-239-055-21	FILTER, LOW PASS (CCD. PAL. Y)
FL155	1-236-848-21	FILTER, LOW PASS
FL401	1-406-452-11	COIL, OSC

< IC >

Ref. No.	Part No.	Description	
IC001	8-752-033-38	IC	CXA1202R (REC/PB HEAD AMP)
IC003	8-752-053-21	IC	CXA1211M (REC C LEVEL, REC Y LEVEL)
IC121	8-759-605-61	IC	CXA1203N (JOG CHROMA PROCESS)
IC151	8-752-065-54	IC	CXA1207AR (Y PROCESS)
IC152	8-752-051-40	IC	CXA1208R (CHROMA PROCESS)
IC154	8-752-333-24	IC	CXL1506M (1H/2H DELAY (CCD) 3FSC PLL)
IC155	8-752-053-21	IC	CXA1211M (EMPHASIS Y LEVEL, PB Y LEVEL)
IC156	8-759-055-82	IC	M62353GP (EVR (D/A CONVERTER))
IC158	8-759-055-82	IC	M62353GP (EVR (D/A CONVERTER))
IC159	8-759-636-33	IC	CXA1452N(CARRIER SET DEVIATION ADJ)
IC401	8-759-056-84	IC	S-8420AF (BATTERY DETECT)
IC402	8-752-838-20	IC	CXP80624-428R (SERVO, SYSTEM CONTROL)
IC403	8-759-258-83	IC	uPD75316GF-463-3B9 (MODE CONTROL (MASTER))
IC404	8-759-059-42	IC	CXA1481AR (ATF SERVO, CLOG DETECT, SP/LP DETECT)
IC405	8-759-044-78	IC	AK6420F-SGX2060 (EEP ROM)
IC406	8-759-081-96	IC	uPD6456GS-620-E2 (CHARACTER GENERATOR)

Ref. No.	Part No.	Description	Remark
IC408	8-759-169-11	IC CXA1575M-E2 (DRUM MOTOR DRIVE)	
IC409	8-759-999-02	IC TL1596CDB (LANC I/O)	
IC410	8-759-062-02	IC MPC1720VM (LOADING MOTOR DRIVE)	

< COIL >

Ref. No.	Part No.	Description	Remark
L001	1-412-951-11	INDUCTOR 10uH	
L002	1-412-032-11	INDUCTOR CHIP 100uH	
L003	1-412-032-11	INDUCTOR CHIP 100uH	
L005	1-412-032-11	INDUCTOR CHIP 100uH	
L009	1-412-950-11	INDUCTOR 8.2uH	
L010	1-410-655-31	INDUCTOR CHIP 120uH	
L011	1-412-280-31	INDUCTOR 330uH	
L012	1-412-957-11	INDUCTOR 33uH	
L013	1-410-657-21	INDUCTOR CHIP 180uH	
L015	1-412-951-11	INDUCTOR 10uH	
L150	1-412-954-11	INDUCTOR 18uH	
L152	1-412-955-11	INDUCTOR 22uH	
L154	1-412-960-21	INDUCTOR 56uH	
L155	1-412-960-21	INDUCTOR 56uH	
L161	1-412-955-11	INDUCTOR 22uH	
L162	1-412-280-31	INDUCTOR 330uH	
L163	1-410-167-41	INDUCTOR CHIP 820uH	
L164	1-410-657-21	INDUCTOR CHIP 180uH	
L169	1-412-962-11	INDUCTOR 82uH	
L170	1-412-951-11	INDUCTOR 10uH	
L171	1-412-954-11	INDUCTOR 18uH	
L175	1-412-963-11	INDUCTOR 100uH	
L176	1-410-656-11	INDUCTOR CHIP 150uH	
L177	1-414-267-11	INDUCTOR 10uH	
L179	1-412-949-21	INDUCTOR 6.8uH	
L180	1-412-963-11	INDUCTOR 100uH	
L181	1-412-963-11	INDUCTOR 100uH	
L182	1-410-655-31	INDUCTOR CHIP 120uH	
L184	1-412-956-21	INDUCTOR 27uH	
L186	1-412-026-11	INDUCTOR CHIP 1uH	
L401	1-414-267-11	INDUCTOR 10uH	
L406	1-414-267-11	INDUCTOR 10uH	
L407	1-412-026-11	INDUCTOR CHIP 1uH	

< IC LINK >

Ref. No.	Part No.	Description	Remark
⚠PS401	1-576-122-21	LINK, IC (0.4A CCP2E10)	
⚠PS402	1-576-123-21	LINK, IC (0.8A CCP2E20)	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q001	8-729-905-23	TRANSISTOR 2SA1576-R	
Q003	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q008	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q010	8-729-905-96	TRANSISTOR DTA114TU	
Q019	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q020	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q021	8-729-905-23	TRANSISTOR 2SA1576-R	
Q024	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q025	8-729-905-96	TRANSISTOR DTA114TU	
Q026	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q121	8-729-905-09	TRANSISTOR DTA144WU	
Q123	8-729-905-18	TRANSISTOR DTC144EU	
Q124	8-729-905-09	TRANSISTOR DTA144WU	
Q125	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q126	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q151	8-729-805-25	TRANSISTOR 2SB1121	
Q152	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q154	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q158	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q159	8-729-905-18	TRANSISTOR DTC144EU	
Q160	8-729-905-09	TRANSISTOR DTA144WU	
Q161	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q162	8-729-905-09	TRANSISTOR DTA144WU	
Q166	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q170	8-729-905-09	TRANSISTOR DTA144WU	
Q171	8-729-117-73	TRANSISTOR 2SC4178-F14	
Q175	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q176	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q177	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q178	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q180	8-729-905-XX	TRANSISTOR DTC114TU	
Q181	8-729-905-XX	TRANSISTOR DTC114TU	
Q182	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q183	8-729-905-96	TRANSISTOR DTA114TU	
Q184	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q189	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q191	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q192	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q194	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q195	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q196	8-729-905-09	TRANSISTOR DTA144WU	
Q199	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q200	8-729-907-00	TRANSISTOR DTC114EU	
Q201	8-729-905-18	TRANSISTOR DTC144EU	
Q202	8-729-905-18	TRANSISTOR DTC144EU	
Q203	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q204	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q205	8-729-905-18	TRANSISTOR DTC144EU	
Q207	8-729-905-12	TRANSISTOR DTA144EU	
Q208	8-729-907-00	TRANSISTOR DTC114EU	
Q210	8-729-905-18	TRANSISTOR DTC144EU	
Q212	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q214	8-729-905-18	TRANSISTOR DTC144EU	
Q219	8-729-905-09	TRANSISTOR DTA144WU	
Q220	8-729-905-18	TRANSISTOR DTC144EU	
Q221	8-729-905-18	TRANSISTOR DTC144EU	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
Q222	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q223	8-729-905-18	TRANSISTOR DTC144EU	
Q229	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q230	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q231	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q232	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q233	8-729-402-32	TRANSISTOR 2SD1819A-R	
Q234	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q236	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q401	8-729-905-18	TRANSISTOR DTC144EU	
Q405	8-729-907-00	TRANSISTOR DTC114EU	
Q409	8-729-822-84	TRANSISTOR 2SB1202FAST	
		< RESISTOR >	
R001	1-216-801-11	METAL CHIP 22 5% 1/16W	
R002	1-216-818-11	METAL CHIP 560 5% 1/16W	
R004	1-216-815-11	METAL CHIP 330 5% 1/16W	
R005	1-216-817-11	METAL CHIP 470 5% 1/16W	
R006	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R007	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R012	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R013	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R016	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R017	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R020	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R021	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R022	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R023	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R024	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R025	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R026	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R027	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R028	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R029	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R030	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R031	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R032	1-216-296-91	METAL GLAZE 0 5% 1/8W	
R033	1-216-791-11	METAL CHIP 3.3 5% 1/16W	
R049	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R050	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R051	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R052	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R054	1-216-817-11	METAL CHIP 470 5% 1/16W	
R055	1-216-820-11	METAL CHIP 820 5% 1/16W	
R056	1-216-864-11	METAL CHIP 0 5% 1/16W	
R057	1-216-818-11	METAL CHIP 560 5% 1/16W	
R058	1-216-818-11	METAL CHIP 560 5% 1/16W	
R060	1-216-864-11	METAL CHIP 0 5% 1/16W	
R061	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R062	1-216-818-11	METAL CHIP 560 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R063	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R064	1-216-817-11	METAL CHIP 470 5% 1/16W	
R066	1-216-809-11	METAL CHIP 100 5% 1/16W	
R067	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R070	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R071	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R072	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R076	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R078	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R079	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R081	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R082	1-216-804-11	METAL CHIP 39 5% 1/16W	
R083	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R085	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R086	1-216-817-11	METAL CHIP 470 5% 1/16W	
R087	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R088	1-216-808-11	METAL CHIP 82 5% 1/16W	
R090	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R097	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R122	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R123	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R124	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R125	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R126	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R127	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R129	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R130	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R133	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R134	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R135	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R136	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R137	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R138	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R139	1-216-817-11	METAL CHIP 470 5% 1/16W	
R140	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R141	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R142	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R143	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R144	1-216-817-11	METAL CHIP 470 5% 1/16W	
R145	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R146	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R151	1-216-296-91	METAL GLAZE 0 5% 1/8W	
R152	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R153	1-216-797-11	METAL CHIP 10 5% 1/16W	
R154	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R155	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R156	1-216-797-11	METAL CHIP 10 5% 1/16W	
R158	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R159	1-216-797-11	METAL CHIP 10 5% 1/16W	
R160	1-216-819-11	METAL CHIP 680 5% 1/16W	

Ref. No.	Part No.	Description				Remark
R161	1-216-809-11	METAL CHIP	100	5%	1/16W	
R162	1-216-864-11	METAL CHIP	0	5%	1/16W	
R163	1-216-864-11	METAL CHIP	0	5%	1/16W	
R164	1-216-811-11	METAL CHIP	150	5%	1/16W	
R167	1-216-820-11	METAL CHIP	820	5%	1/16W	
R168	1-216-820-11	METAL CHIP	820	5%	1/16W	
R170	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R175	1-216-810-11	METAL CHIP	120	5%	1/16W	
R177	1-216-819-11	METAL CHIP	680	5%	1/16W	
R178	1-216-817-11	METAL CHIP	470	5%	1/16W	
R179	1-216-820-11	METAL CHIP	820	5%	1/16W	
R189	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R191	1-216-864-11	METAL CHIP	0	5%	1/16W	
R192	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R193	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R194	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R196	1-216-815-11	METAL CHIP	330	5%	1/16W	
R198	1-216-817-11	METAL CHIP	470	5%	1/16W	
R200	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R201	1-216-815-11	METAL CHIP	330	5%	1/16W	
R202	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R203	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R204	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R205	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R206	1-216-813-11	METAL CHIP	220	5%	1/16W	
R211	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R213	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R216	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R217	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R218	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R219	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R220	1-216-811-11	METAL CHIP	150	5%	1/16W	
R221	1-216-864-11	METAL CHIP	0	5%	1/16W	
R222	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R223	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R224	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R226	1-216-819-11	METAL CHIP	680	5%	1/16W	
R228	1-216-813-11	METAL CHIP	220	5%	1/16W	
R230	1-216-296-91	METAL GLAZE	0	5%	1/8W	
R231	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R232	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R234	1-216-864-11	METAL CHIP	0	5%	1/16W	
R238	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R242	1-216-818-11	METAL CHIP	560	5%	1/16W	
R243	1-216-809-11	METAL CHIP	100	5%	1/16W	
R244	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R245	1-216-817-11	METAL CHIP	470	5%	1/16W	
R246	1-216-817-11	METAL CHIP	470	5%	1/16W	
R247	1-216-864-11	METAL CHIP	0	5%	1/16W	
R248	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R250	1-216-810-11	METAL CHIP	120	5%	1/16W	
R251	1-216-806-11	METAL GLAZE	56	5%	1/16W	
R253	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R254	1-216-818-11	METAL CHIP	560	5%	1/16W	
R255	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R256	1-216-864-11	METAL CHIP	0	5%	1/16W	
R257	1-216-818-11	METAL CHIP	560	5%	1/16W	
R258	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R259	1-216-816-11	METAL CHIP	390	5%	1/16W	
R260	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R266	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R267	1-216-864-11	METAL CHIP	0	5%	1/16W	
R270	1-216-296-91	METAL GLAZE	0	5%	1/8W	
R271	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R272	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R273	1-216-807-11	METAL CHIP	68	5%	1/16W	
R274	1-216-296-91	METAL GLAZE	0	5%	1/8W	
R275	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R276	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R277	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R278	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R279	1-216-818-11	METAL CHIP	560	5%	1/16W	
R280	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R281	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R282	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R283	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R285	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R286	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R290	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R291	1-216-820-11	METAL CHIP	820	5%	1/16W	
R294	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R295	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R297	1-216-820-11	METAL CHIP	820	5%	1/16W	
R298	1-216-820-11	METAL CHIP	820	5%	1/16W	
R299	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R300	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R301	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R302	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R303	1-216-846-11	METAL CHIP	120K	5%	1/16W	
R304	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R305	1-216-818-11	METAL CHIP	560	5%	1/16W	
R306	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R307	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R308	1-216-819-11	METAL CHIP	680	5%	1/16W	
R309	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R310	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R311	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R312	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R314	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R315	1-216-833-11	METAL CHIP	10K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R316	1-216-817-11	METAL CHIP	470	5%	1/16W	
R318	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R321	1-216-864-11	METAL CHIP	0	5%	1/16W	
R323	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R324	1-216-817-11	METAL CHIP	470	5%	1/16W	
R325	1-216-816-11	METAL CHIP	390	5%	1/16W	
R329	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R331	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R333	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R334	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R335	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R337	1-216-864-11	METAL CHIP	0	5%	1/16W	
R339	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R341	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R342	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R343	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R344	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R345	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R346	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R347	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R349	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R350	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R352	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R353	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R354	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R355	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R356	1-216-817-11	METAL CHIP	470	5%	1/16W	
R357	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R358	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R361	1-216-864-11	METAL CHIP	0	5%	1/16W	
R362	1-216-810-11	METAL CHIP	120	5%	1/16W	
R366	1-216-844-11	METAL CHIP	82K	5%	1/16W	
R371	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R373	1-216-817-11	METAL CHIP	470	5%	1/16W	
R374	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R375	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R376	1-216-817-11	METAL CHIP	470	5%	1/16W	
R377	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R378	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R379	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R380	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R381	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R382	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R383	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R384	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R385	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R386	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R387	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R388	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R389	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R390	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R391	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R392	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R393	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R394	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R397	1-216-820-11	METAL CHIP	820	5%	1/16W	
R398	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R400	1-216-864-11	METAL CHIP	0	5%	1/16W	
R401	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R402	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R403	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R404	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R405	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R406	1-216-809-11	METAL CHIP	100	5%	1/16W	
R407	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R408	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R409	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R410	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R411	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R412	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R413	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R414	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R415	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R416	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R417	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R418	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R419	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R420	1-216-856-11	METAL CHIP	820K	5%	1/16W	
R421	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R422	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R423	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R424	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R425	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R426	1-216-856-11	METAL CHIP	820K	5%	1/16W	
R427	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R428	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R429	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R430	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R431	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R432	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R433	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R434	1-216-864-11	METAL CHIP	0	5%	1/16W	
R435	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R436	1-216-864-11	METAL CHIP	0	5%	1/16W	
R437	1-216-817-11	METAL CHIP	470	5%	1/16W	
R438	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R439	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R441	1-216-864-11	METAL CHIP	0	5%	1/16W	
R442	1-216-864-11	METAL CHIP	0	5%	1/16W	
R443	1-216-845-11	METAL CHIP	100K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R444	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R445	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R449	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R450	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R451	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R452	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R454	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R456	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R457	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R460	1-216-864-11	METAL CHIP	0	5%	1/16W	
R461	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R462	1-216-809-11	METAL CHIP	100	5%	1/16W	
R463	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R464	1-216-296-91	METAL GLAZE	0	5%	1/8W	
R466	1-216-296-91	METAL GLAZE	0	5%	1/8W	
R468	1-216-806-11	METAL GLAZE	56	5%	1/16W	
R472	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R474	1-217-671-11	METAL CHIP	1	5%	1/10W	
R475	1-217-671-11	METAL CHIP	1	5%	1/10W	
R476	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R477	1-216-296-91	METAL GLAZE	0	5%	1/8W	
R479	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R480	1-217-671-11	METAL CHIP	1	5%	1/10W	
R481	1-217-671-11	METAL CHIP	1	5%	1/10W	
R484	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R485	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R488	1-216-809-11	METAL CHIP	100	5%	1/16W	
R489	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R490	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R494	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R495	1-216-864-11	METAL CHIP	0	5%	1/16W	
R497	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R504	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R505	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R506	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R507	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R508	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R509	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R510	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R511	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R512	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R513	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R514	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R516	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R517	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R518	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R519	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R520	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R535	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R536	1-216-821-11	METAL CHIP	1K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R537	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R538	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R539	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R540	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R541	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R542	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R543	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R544	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R545	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R546	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R547	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R548	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R549	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R550	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R561	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R562	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R563	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R568	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R569	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R570	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R571	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R572	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R573	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R574	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R576	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R577	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R578	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R579	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R580	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R581	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R582	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R583	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R586	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R587	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R595	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R598	1-216-817-11	METAL CHIP	470	5%	1/16W	
R599	1-216-817-11	METAL CHIP	470	5%	1/16W	

< VARIABLE RESISTOR >

RV151	1-238-087-11	RES, ADJ, CERMET	1K	

< THERMISTOR >

TH073	1-809-358-11	THERMISTOR, NTC (2125)	15K
TH113	1-809-350-21	THERMISTOR, NTC (2125)	470

< FLEXIBLE BOARD >

W001	1-696-489-11	FP-588 FLEXIBLE BOARD
W405	1-644-285-11	FP-572 FLEXIBLE BOARD

Ref. No.	Part No.	Description	Remark
		< VIBRATOR >	
X151	1-579-366-11	VIBRATOR, CRYSTAL (4.43MHz)	
X401	1-579-063-21	VIBRATOR, CERAMIC (4.19MHz)	
X402	1-579-049-21	VIBRATOR, CRYSTAL (32.768kHz)	
X403	1-579-368-31	VIBRATOR, CRYSTAL (11.719MHz)	

Sony Corporation
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Personal A&V Products Div.

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Quality Engineering Dept.

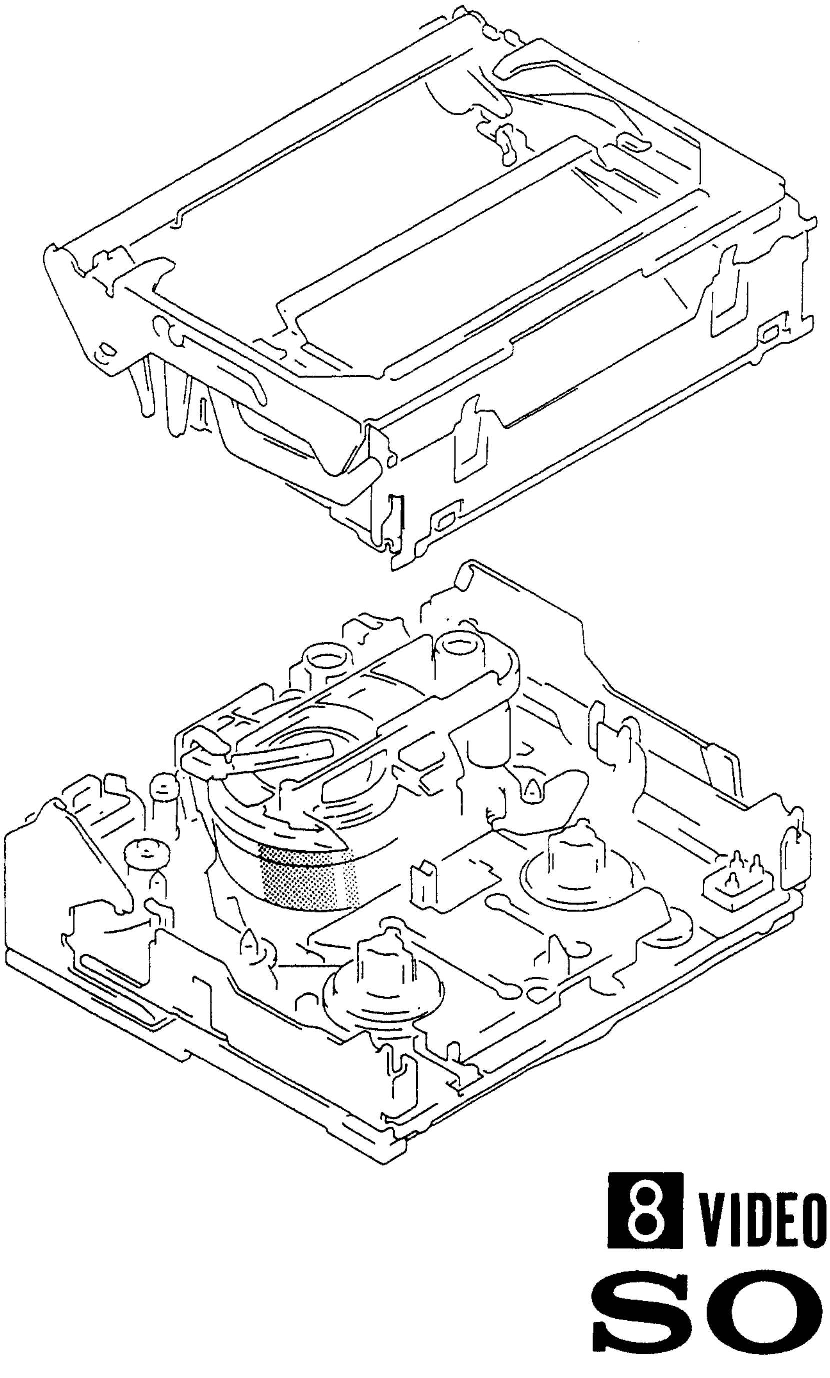
8 mm Video MECHANICAL ADJUSTMENT MANUAL IV

V12995

A MECHANISM

Video 8

File with the SERVICE MANUAL



8 VIDEO RECORDER

SONY®

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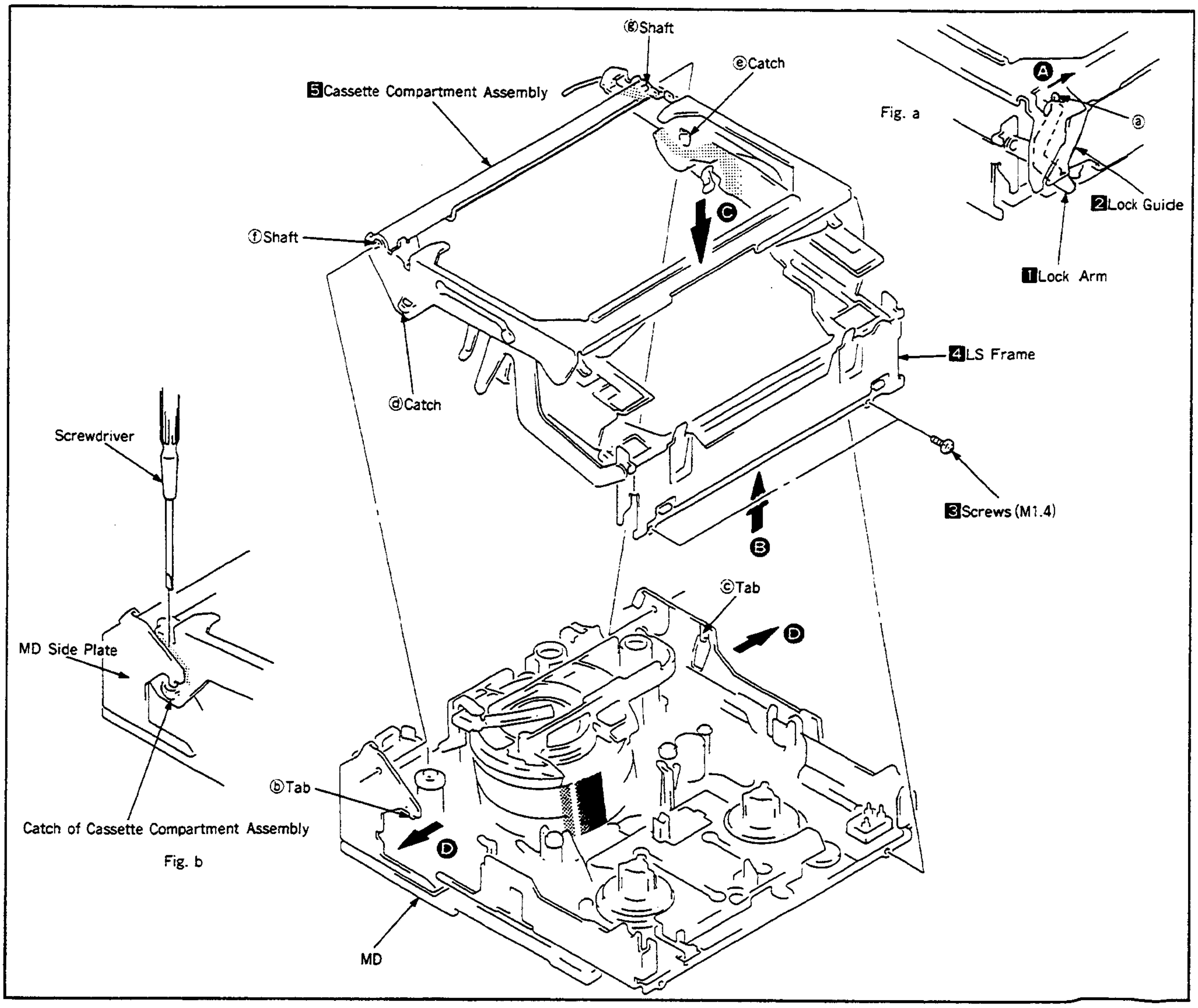
1. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

For removal of the cabinet and boards, refer to "Disassembly" in each Service Manual.
Mechanical adjustment is done in the USE mode. (To select the USE mode, refer to "1-3, Handling of Mode Selector".)

1-1. CASSETTE COMPARTMENT ASSEMBLY

1. Removal (Fig. 1)

1) Select the USE mode.
2) Push the part ⓐ of lock arm 1 toward the arrow 🅐 to unlock from lock guide 2, and raise the cassette compartment as shown in Fig. a.
3) Remove two screws 3 and remove the LS frame 4 toward the arrow 🅑.
4) With the cassette compartment assembly 5 pushed in arrow 🅒 direction, distort tabs ⓑ and ⓒ of MD side plate toward the arrow 🅓 to disengage from catches ⓓ and ⓔ of cassette compartment assembly respectively.
   In such a case, insert a screwdriver between MD side plate and catch and disengage the tab ⓑ first, then disengage the tab ⓒ for easy removal as shown in Fig. b.
5) Raise the cassette compartment assembly 5 in the opposite direction of arrow 🅒 until the shafts ⓕ and ⓖ are disengaged, and push left and right side plates toward arrow 🅓 to remove the cassette compartment assembly.



ⓖShaft
ⓔCatch
5 Cassette Compartment Assembly
Fig. a
🅐
ⓐ
2 Lock Guide
1 Lock Arm
🅒
ⓕShaft
4 LS Frame
ⓓCatch
Screwdriver
3 Screws (M1.4)
🅑
ⓒTab
🅓
MD Side Plate
ⓑTab
🅓
Catch of Cassette Compartment Assembly
Fig. b
MD

Fig. 1

2. Mounting (Fig. 2)

1) Select the [USE] mode.
2) Draw the cassette holder ❻ of cassette compartment assembly ❺ toward the arrow 🅔, and lower the LS frame ❹ toward the arrow 🅕.
3) With the cassette compartment assembly ❺ tilted by about 45° against MD, insert shafts ⓕ and ⓖ of cassette compartment assembly into holes ⓗ and ⓘ of MD side plate respectively.
   At this time, the part ⓙ of torsion bar must be positioned on the side ⓚ of LS flexible board (FP-443) (not on the side ⓛ), as shown in Fig. c.
4) Holding holes ⓗ and ⓘ of MD side plate, press the cassette compartment assembly ❺ so that its catches ⓓ and ⓔ are engaged with tabs ⓑ and ⓒ of MD side plate. In such a case, the lock arm ❶ of cassette compartment assembly must be inserted into a groove in the guide rail ❼ on the MD side plate as shown in Fig. d.
5) Insert left and right side plates ⓜ and ⓝ of LS frame ❹ inside the LS chassis ❽.
6) Push down the cassette compartment to lock.

Note : Make sure that the shafts ⓕ, ⓖ and the tabs ⓞ, ⓟ are set in the MD side plate properly.

7) Tighten two screws ❸.

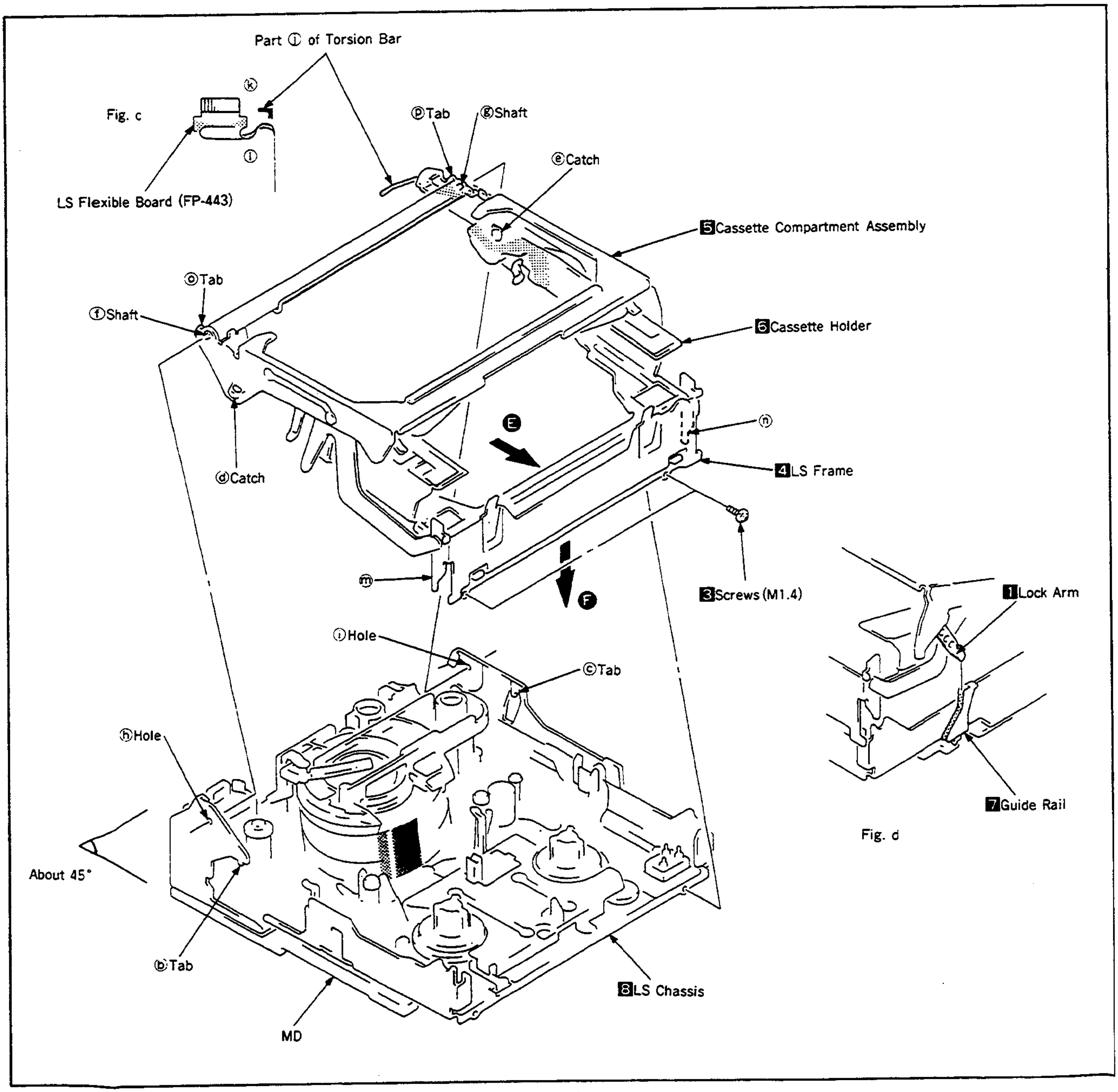

Part ⓙ of Torsion Bar
ⓚ
Fig. c
ⓛ
LS Flexible Board (FP-443)
ⓟTab
ⓖShaft
ⓔCatch
❺Cassette Compartment Assembly
ⓞTab
ⓕShaft
❻Cassette Holder
🅔
ⓝ
ⓓCatch
❹LS Frame
ⓜ
🅕
❸Screws (M1.4)
❶Lock Arm
ⓘHole
ⓒTab
ⓗHole
❼Guide Rail
Fig. d
About 45°
ⓑTab
❽LS Chassis
MD

Fig. 2

1-2. OPERATION WITH CASSETTE COMPARTMENT ASSEMBLY REMOVED (Fig. 3)

1) Referring to the Service Manual, supply power with the cabinet and camera removed. (Make the mechanical deck ready to operate.)
2) Place the cap 2 on the Reflector C 1.
3) Press the pin of the push switch 3 (ON state) and fix it with adhesive tape 4 in that state.

Note : Press the asterisked (✻) pin to set the REC mode.
(This is not required for the other modes.)

4) Push the cassette compartment DOWN switch 5 in an arrow direction as shown in Fig. a.

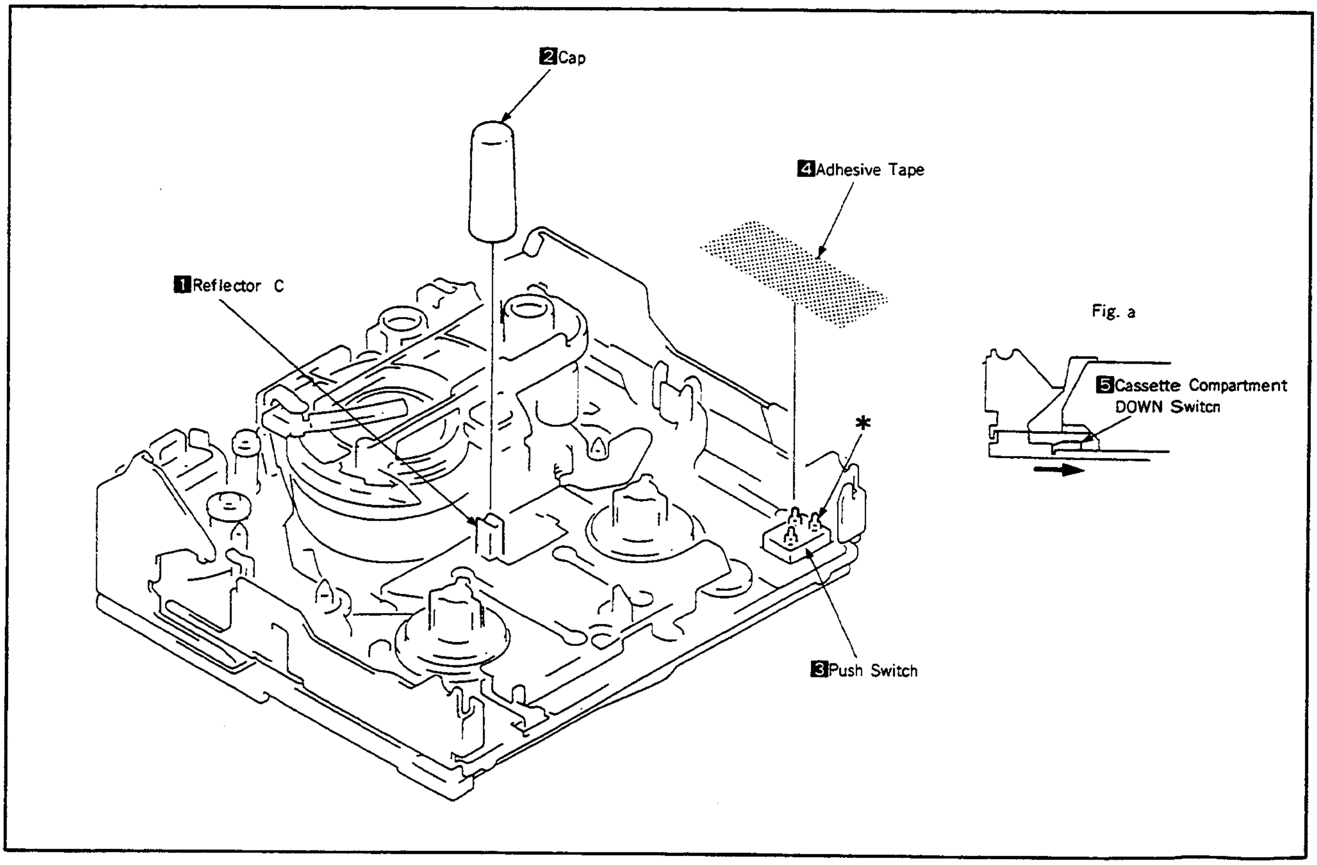

2 Cap
4 Adhesive Tape
1 Reflector C
Fig. a
5 Cassette Compartment DOWN Switcn
✻
3 Push Switch

Fig. 3

1-3. HANDLING OF MODE SELECTOR

- Stick the MD process table label to the mode selector IV panel, then mount the panel on the mode selector.
  U,U', FL, O, O' and A mechanisms have different mode indications respectively. Select your disired type. (Fig.4)

1 Construction (Fig.5)

2 Connection (Fig.6)

For CCD-FX410 series

1) Insert the FP-425 flexible connector ❶ and M-SW connector ❷ into the mode selector IV conversion connector ❸ respectively.

3. Handling

1) Use the M mode selector buttons only.
2) During mode selection, "BLANK" lights up when no mode is being selected.
3) If the right M mode selector button is kept pressed, END, EJECT, USE, LOAD, READY,TURN, REC and FF light up in that order.
4) When changing over from the FF mode back to the END mode, press the left M mode selector botton to select your desired mode.

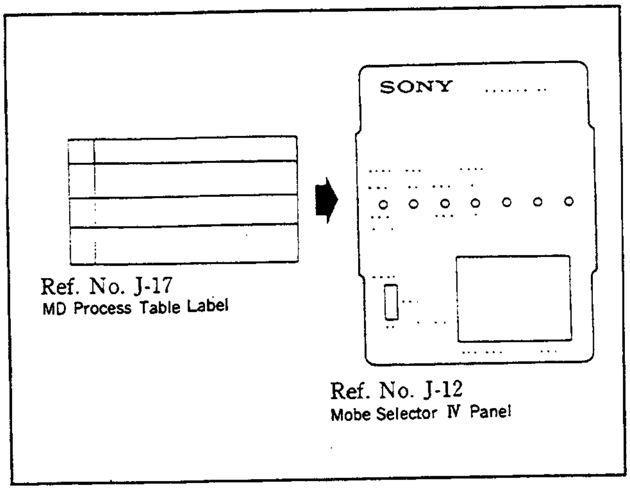

SONY
Ref. No. J-17
MD Process Table Label
Ref. No. J-12
Mobe Selector Ⅳ Panel

Fig. 4

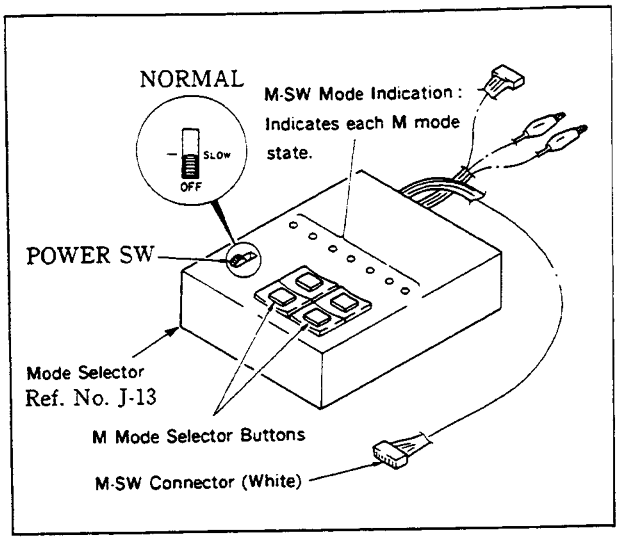

NORMAL
SLOW
OFF
M-SW Mode Indication : Indicates each M mode state.
POWER SW
Mode Selector
Ref. No. J-13
M Mode Selector Buttons
M-SW Connector (White)

Fig. 5

For CCD-FX410 series

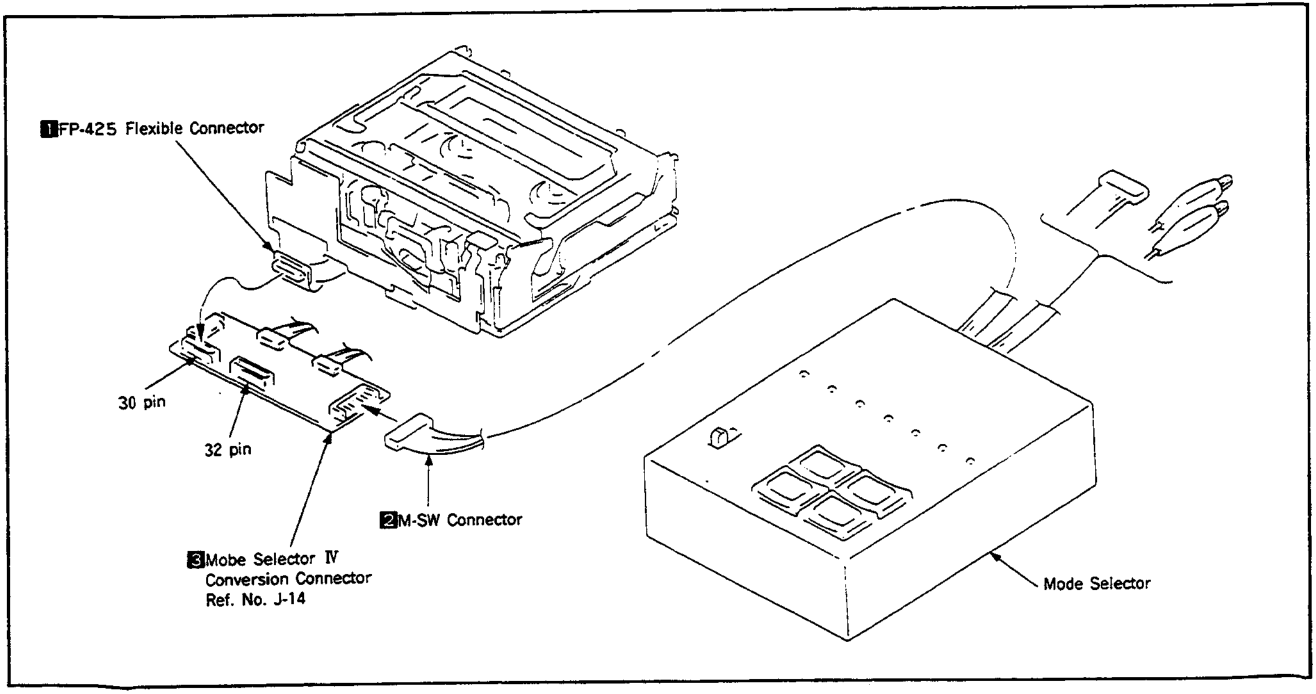
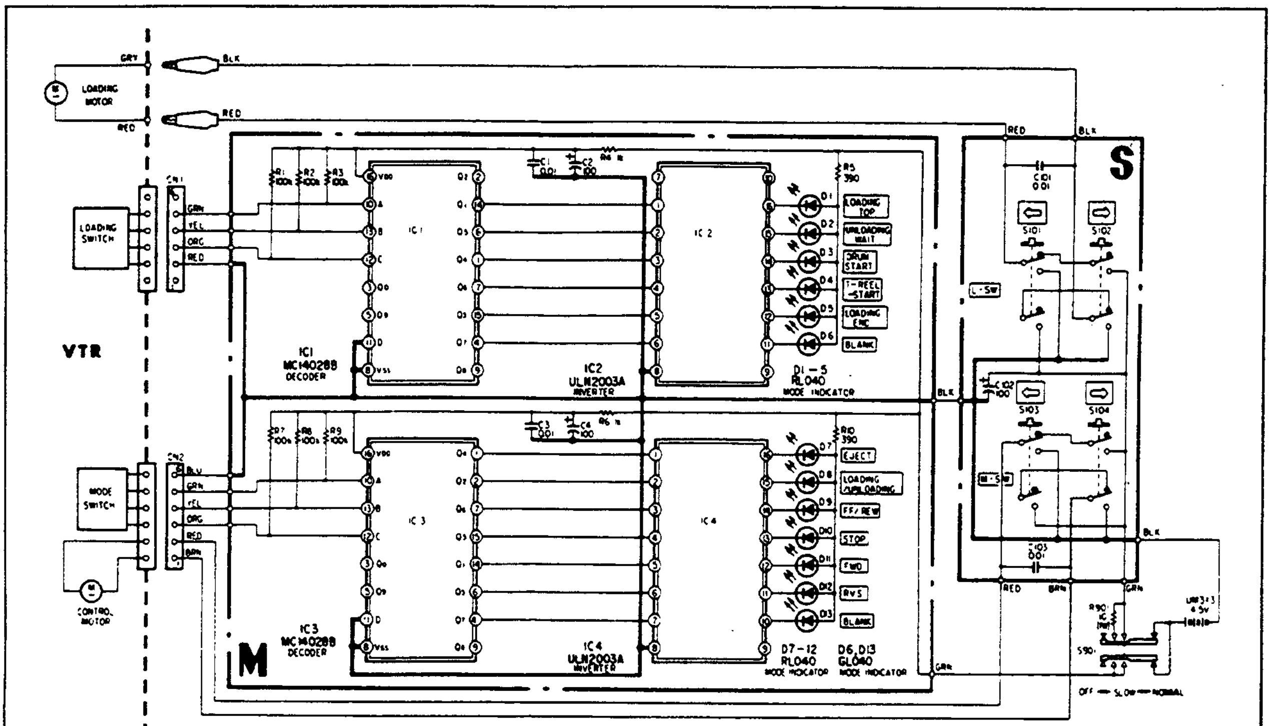

❶FP-425 Flexible Connector
30 pin
32 pin
❷M-SW Connector
❸Mobe Selector Ⅳ Conversion Connector Ref. No. J-14
Mode Selector

Fig. 6

1-4. MODE SELECTOR SCHEMATIC DIAGRAM


GRY
BLK
LOADING MOTOR
RED
LOADING SWITCH
CN1
GRN
YEL
ORG
RED
VTR
MODE SWITCH
CN2
BLU
GRN
YEL
ORG
RED
BRN
CONTROL MOTOR
R1 100k
R2 100k
R3 100k
C1 0.01
C2 100
R4 1k
R5 390
IC1
MC14028B
DECODER
IC2
ULN2003A
INVERTER
D1 – 5
RL040
MODE INDICATOR
LOADING TOP
UNLOADING WAIT
DRUM START
T-REEL -START
LOADING END
BLANK
R7 100k
R8 100k
R9 100k
C3 0.01
C4 100
R6 1k
R10 390
IC3
MC14028B
DECODER
IC4
ULN2003A
INVERTER
D7 – 12
RL040
MODE INDICATOR
D6, D13
GL040
MODE INDICATOR
EJECT
LOADING /UNLOADING
FF/REW
STOP
FWD
RVS
BLANK
M
S
RED
BLK
C101 0.01
S101
S102
L-SW
C102 100
S103
S104
M-SW
C103 0.01
BLK
GRN
BRN
R901 10 1W
UM3×3 4.5V
S901
OFF — SLOW — NORMAL

M-SW (IC 3)

DECODER INPUT			MODE	LED NO
C	B	A		
0	0	0		
0	0	1	FWD	D11
0	1	0	LOADING/UNLOADING	D8
0	1	1	STOP	D10
1	0	0	EJECT	D7
1	0	1	RVS	D12
1	1	0	FF/REW	D9
1	1	1	BLANK	D13

0: INPUT LEVEL L
1: INPUT LEVEL H

L-SW (IC 1)

DECODER INPUT			MODE	LED NO
C	B	A		
0	0	0		
0	0	1	LOADING TOP	D1
0	1	0		
0	1	1	LOADING END	D5
1	0	0	DRUM START	D3
1	0	1	UNLOADING WAIT	D2
1	1	0	T-REEL -START	D4
1	1	1	BLANK	D6

SWITCH		DIRECTION OF MOTOR REVOLUTION
⇦	⇨	
OFF	OFF	STOP
ON	OFF	⇦
OFF	ON	⇨

⇦ L-SW LOADING END → LOADING TOP
M-SW RVS → EJECT

⇨ L-SW LOADING TOP → LOADING END
M-SW EJECT → RVS

1-5. MODE SELECTOR PARTS LIST

Ref. No	Part No.	Description		
		CAPACITOR		
C1	1-108-579-00	MILER	0.01μF	50V
C2	1-123-333-00	ELECT	100μF	24V
C3	1-108-579-00	MILER	0.01μF	50V
C4	1-123-333-00	ELECT	100μF	24V
C101	1-108-579-00	MILER	0.01μF	50V
C102	1-123-333-00	ELECT	100μF	24V
C103	1-108-579-00	MILER	0.01μF	50V
		DIODE		
D1	8-719-812-31	DIODE TLR123		
D2	8-719-812-31	DIODE TLR123		
D3	8-719-812-31	DIODE TLR123		
D4	8-719-812-31	DIODE TLR123		
D5	8-719-812-31	DIODE TLR123		
D6	8-719-812-33	DIODE TLG123A		
D7	8-719-812-31	DIODE TLR123		
D8	8-719-812-31	DIODE TLR123		
D9	8-719-812-31	DIODE TLR123		
D10	8-719-812-31	DIODE TLR123		
D11	8-719-812-31	DIODE TLR123		
D12	8-719-812-31	DIODE TLR123		
D13	8-719-812-33	DIODE TLG123A		

Ref. No	Part No.	Description		
		IC		
IC1	8-752-240-28	IC TC4028BP		
IC2	8-752-120-03	IC μPA2003C		
IC3	8-759-240-28	IC TC4028BP		
IC4	8-759-120-03	IC μPA2003C		
		RESISTOR		
R1	1-247-179-00	CARBON	100K	1/4W
R2	1-247-179-00	CARBON	100K	1/4W
R3	1-247-179-00	CARBON	100K	1/4W
R4	1-247-131-00	CARBON	1K	1/4W
R5	1-247-121-00	CARBON	390	1/4W
R6	1-247-131-00	CARBON	1K	1/4W
R7	1-247-179-00	CARBON	100K	1/4W
R8	1-247-179-00	CARBON	100K	1/4W
R9	1-247-179-00	CARBON	100K	1/4W
R10	1-247-121-00	CARBON	390	1/4W
R901	1-214-594-00	METAL	10	1W

2. PERIODIC CHECK AND MAINTENANCE

- Carry out the following maintenance and periodic checks in order not only to fully exhibit the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regarless of the length of use.

2-1. CLEANING OF ROTARY DRUM ASSEMBLY

1) Gently apply chamois cloth (Ref. No. J-2) soaked in cleaning liquif (Ref. No.J-1) to the rotary drum assembly.
   Clean it by rotating the upper rotary drum assembly slowly counterclockwise by hand.

Note : Do not rotate the motor by power or rotate the upper rotary drum assembly clockwise by hand. Also, the head tip is highly likely to be damaged if the chamois cloth is moved in a pependicular direction to the it. make sure to follow the instructions above for cleaning the rotarydrum assembly.

2-2. CLEANING OF TAPE PATH (Fig.7)

1) In the USE mode, clean the tape running system (TG - 1,- 2,- 3,- 4,- 5, - 6, - 7, pinch roller, and capstan shaft) and the lower drum, using a super fine applicator (Ref. No. J - 3) soaked in the cleaning liquid.

Note : Note that no oil or grease of each link mechanism adheres to the super fine applicator (Ref. No. J - 3).

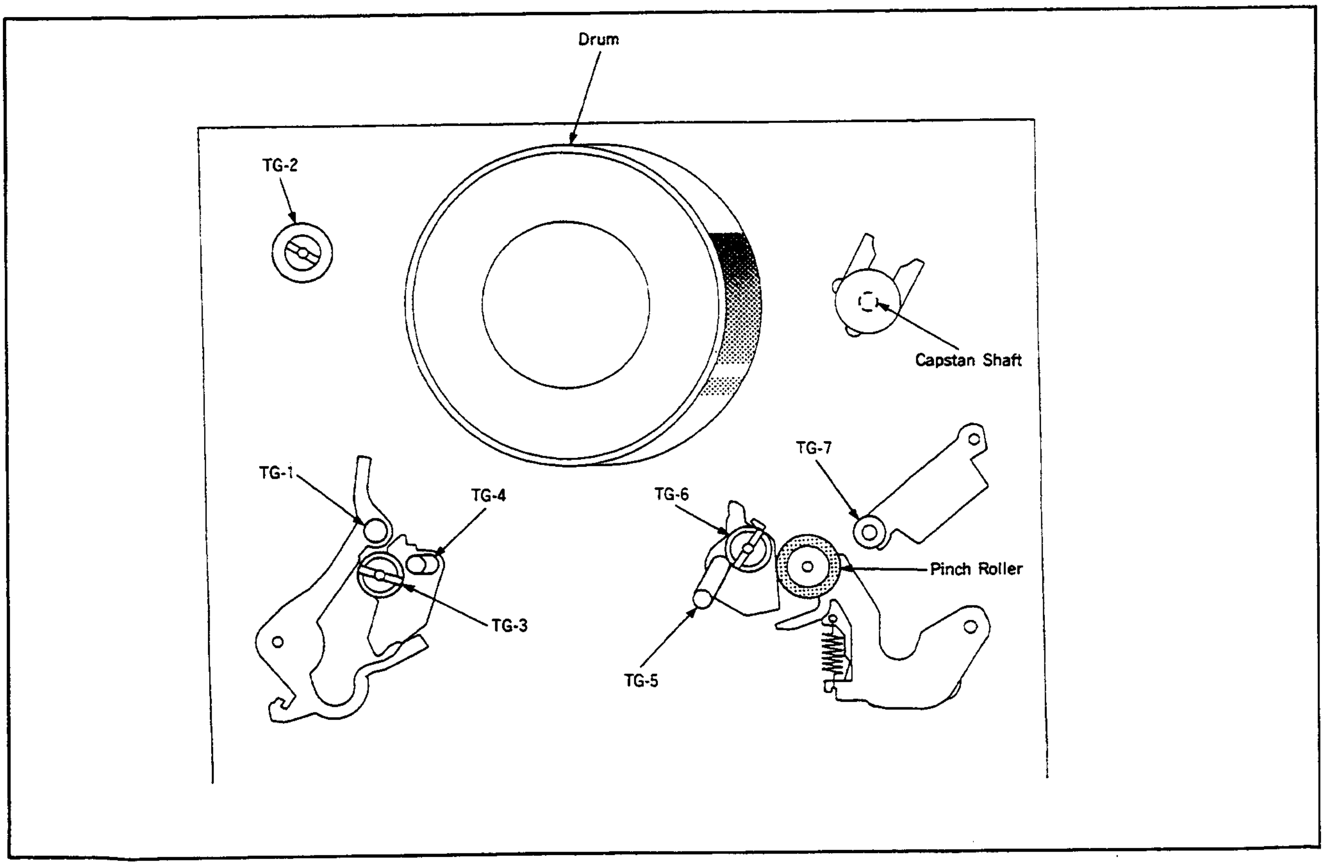


Fig. 7

2-3. PERILDIC CHECK ITEMS

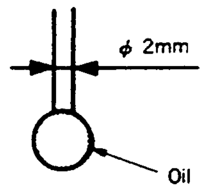
	Location of Maintenance and check	Hours of Use (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Tape transportion System	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of oil
	Cleaning and degaussing of rotary assembly	○	○	○	○	○	○	○	○	○	○	Be careful of oil
Driving System	Relay belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-944-539-01
	Capstan shaft	—	◎	—	◎	—	◎	—	◎	—	◎	Be adsolutely careful not to get oil on the tape path surface.
	Relay pulley shaft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	A-7040-304-A
Performance Confirmation	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD. RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○ : Cleaning ◎ : Oil ☆ : Confirmation

Note : When overhauling, refer to the items above to replace parts.

Note : Concerning oil

- Be sure to use specified oil. (If you use oil with different visicosity, etc., it may cause troubles.)
  Oil : Part No. 7-661-018-18 (Mitsubishi Diamond Oil Hydrofluid NT - 68)
- When lubricating bearings, be sure use oil free from dust, etc. (If you use oil with dust, etc. contained, it may cause bearings to be worn out or seized.)
- A drip of oil refers to an amount attached to the tip of a ϕ 2mm stick shown in the right figure.

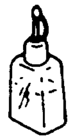


2-4. Service jigs list

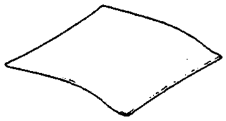
Ref. No.	Name	Part No.	Fixture No.	Usage and Others
J-1	Cleaning fluid	Y-2031-001-0		
J-2	Chamois cloth	2-034-697-00		
J-3	Super fine applicator (Made by NIPPON APPLICATOR, P752D)			
J-4	Head degausser	Widely available		
J-5	Small mirror for adjustment Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-6	Alignment tape NTSC (WR5-1N) PAL (WR5-1C)	8-967-995-01 8-967-995-06		Tape path
J-9	FWD and RVS winding torque cassette	J-6080-824-A	GD-2086	
J-10	Rotary drum jig	(Attached to the maintenance rotary upper drum)		
J-11	Screwdriver for tape path	J-6082-026-A		For tape guide adjustment
J-12	Mode selector Ⅳ panel	J-6082-105-A		
J-13	Mode selector	J-6080-825-A		For all models
J-14	Mode selector Ⅳ conversion connector	J-6082-167-A		
J-15	FWD B.T. adjusting driver	J-6082-182-A		
J-16	Adjusting remote controller	J-6082-053-B		Tape path (Setting of PATH mode)
J-17	MD process table label	J-6082-166-A		

Other equipment ●Oscilloscope
●Analog tester (20 kΩ)

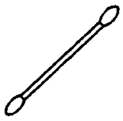
J-1



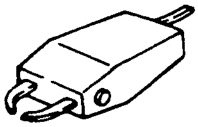
J-2



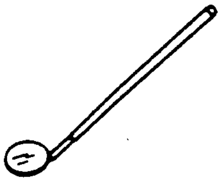
J-3



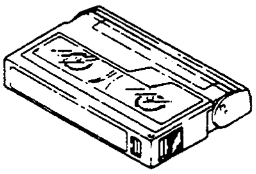
J-4



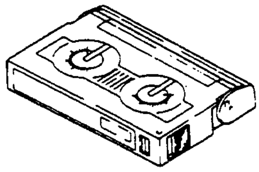
J-5



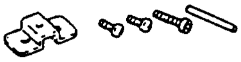
J-6



J-9

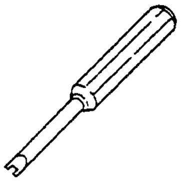


J-10

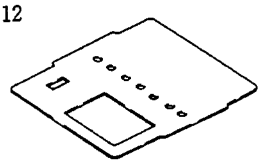


(Attached to the maintenance rotary upper drum)

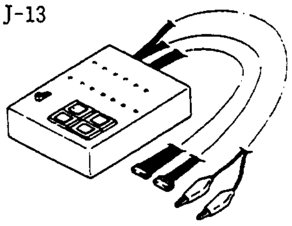
J-11



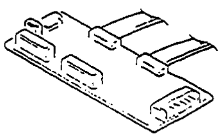
J-12



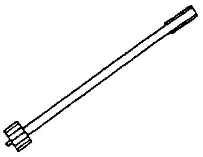
J-13



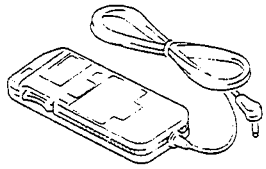
J-14



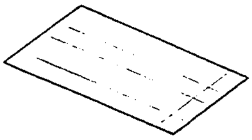
J-15



J-16



J-17



3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

Note : Use the mode selector (Ref. No. J-13) for the following mechanical checks, adjustments and replacements.

Note : The modes in ☐ are those set by pressing the mode selector buttons.

3-1. RETAINER, GOOSENECK ASSEMBLY (Fig. 8)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove a screw **1**.
3) Remove the Retainer, Gooseneck assembly **2**.

2. Mounting

1) Mount the Retainer, Gooseneck assembly **2** with its two tabs and holes of LS chassis engaged with its hole and a boss of LS chassis.
2) Tighten the screw **1**.
3) Referring to 1-1, mount the cassette compartment assembly.

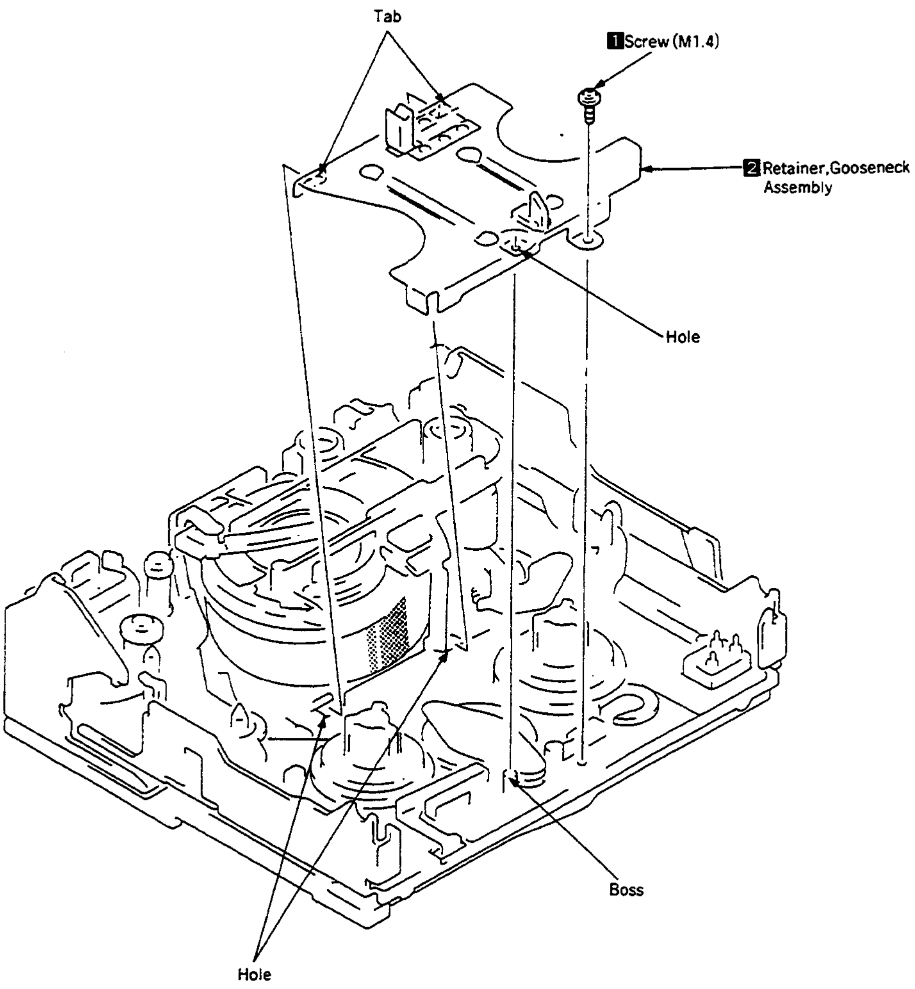


Fig. 8

3-2. PROTECTOR BASE ASSEMBLY (Fig. 9)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screws **1**, then the protector base assembly **2**.

2. Mounting

1) Mount the protector base assembly **2** with its three hole engaged with two dowels of mechanical chassis, and a dowel of TG-5 Base Holder **3**.
2) Tighten two screws **1**.
3) Referring to 1-1, mount the cassette compartment assembly.

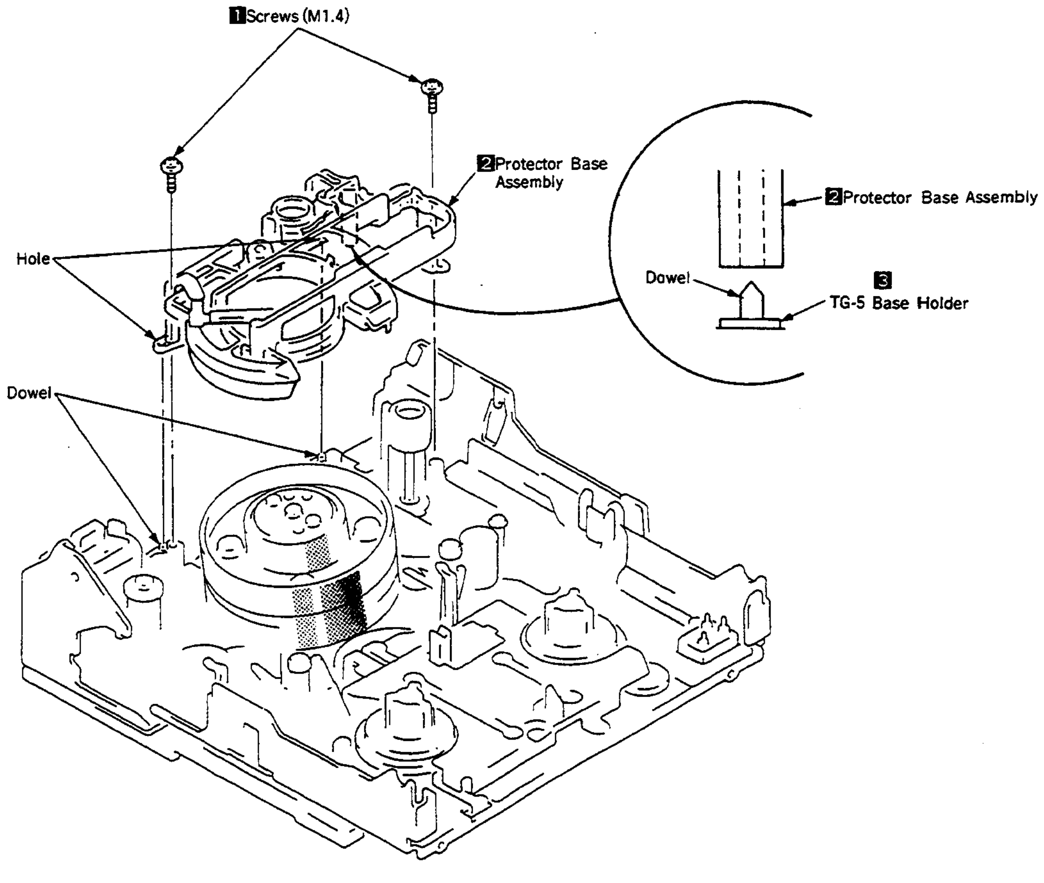

1 Screws (M1.4)
2 Protector Base Assembly
Hole
Dowel
2 Protector Base Assembly
Dowel
3 TG-5 Base Holder

Fig. 9

3-3. DRUM ASSEMBLY (Fig. 10)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-2, remove the protect base assembly.
3) Disconnect the connector of FP-444 flexible board ❶ on the back of MD.
4) Remove three screw ❷, then the drum assembly ❸.

Note : Do not touch the outer surfaced of drum (hold portions 🅐 and 🅑 of drum).

2. Mounting

1) Mount the drum assembly ❸ while aligning with two dowels ⓐ of chassis.

Note : Do not touch the outer surfaced of drum (hold portions 🅐 and 🅑 of drum).

2) Tighten three screw assemblies ❷ in the order of 1, 2 and 3.

Note : Tighten lightly not to deform the drum lead.

3) Apply a screw locking agent to prevent screws ftom loosening.

Note : In tightening the screws, pushing down the drum extremely will allow the drum to float up.

4) Connect the connector of FP-444 flexible board ❶ on the back of MD.
5) Referring to 3-2, mount the protect base assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

Note : After mounting, make tape path adjustment in Section 4.

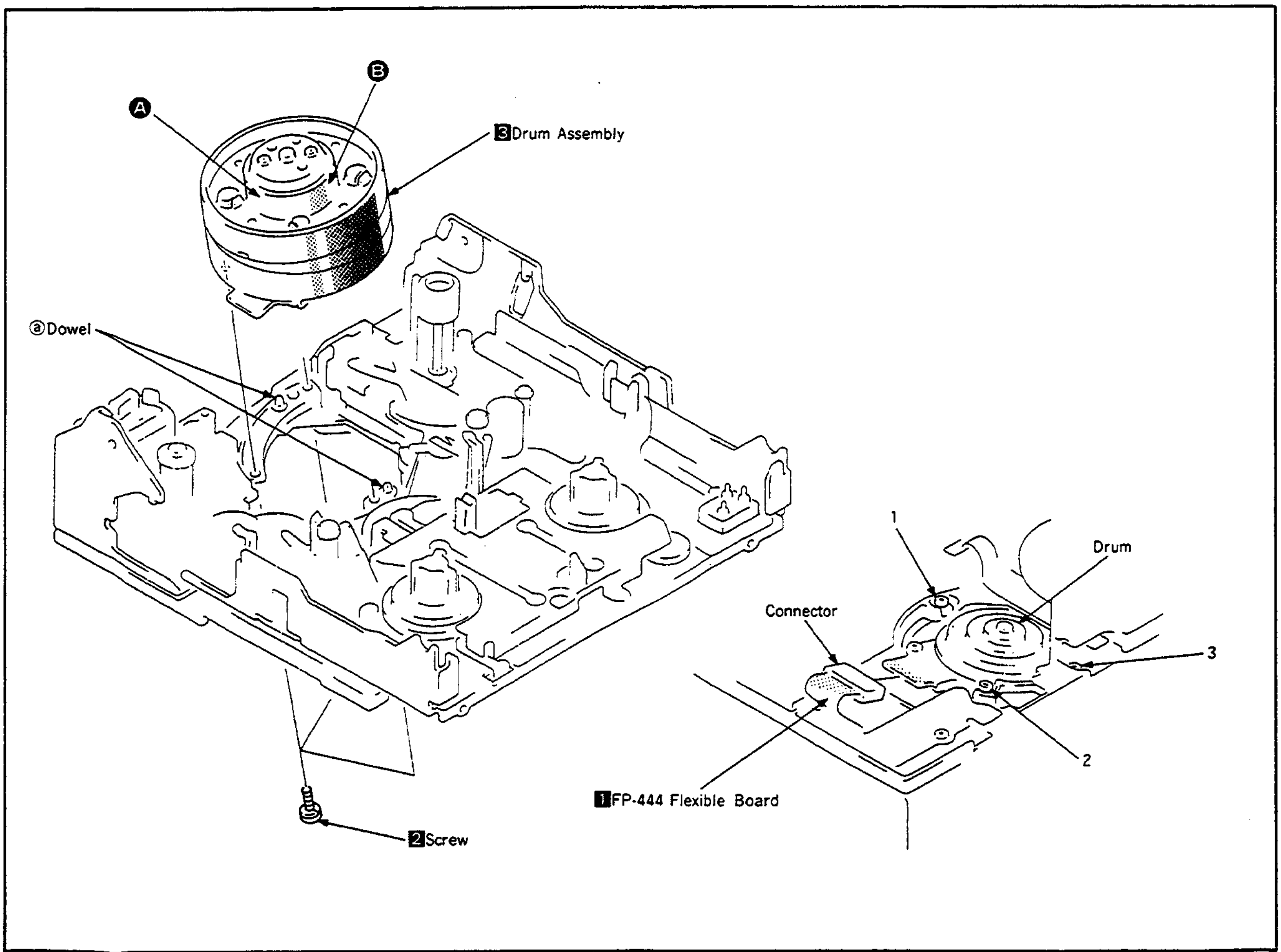


Fig. 10

3-4. CAPSTAN MOTOR ASSEMBLY (Fig. 11)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screw 1, then the capstan cover 2.
3) Remove the screw 3, then the capstan motor assembly 4.

2. Mounting

1) Mount the capstan motor assembly 4 and tighten the scre 3.

Note : In mounting the capstan motor assembly, hold lightly the capstan motor assembly until the rotor gear aligns with the change gear Assy, then insert fully the assembly when both gears are engaged completely by manually rotating the rotor. (Take care not to damage the change gear Assy.)

2) Mount the capstan cover 2 and tighten two screws 1.
3) Referring to 1-1, mount the cassette compartment assembly.

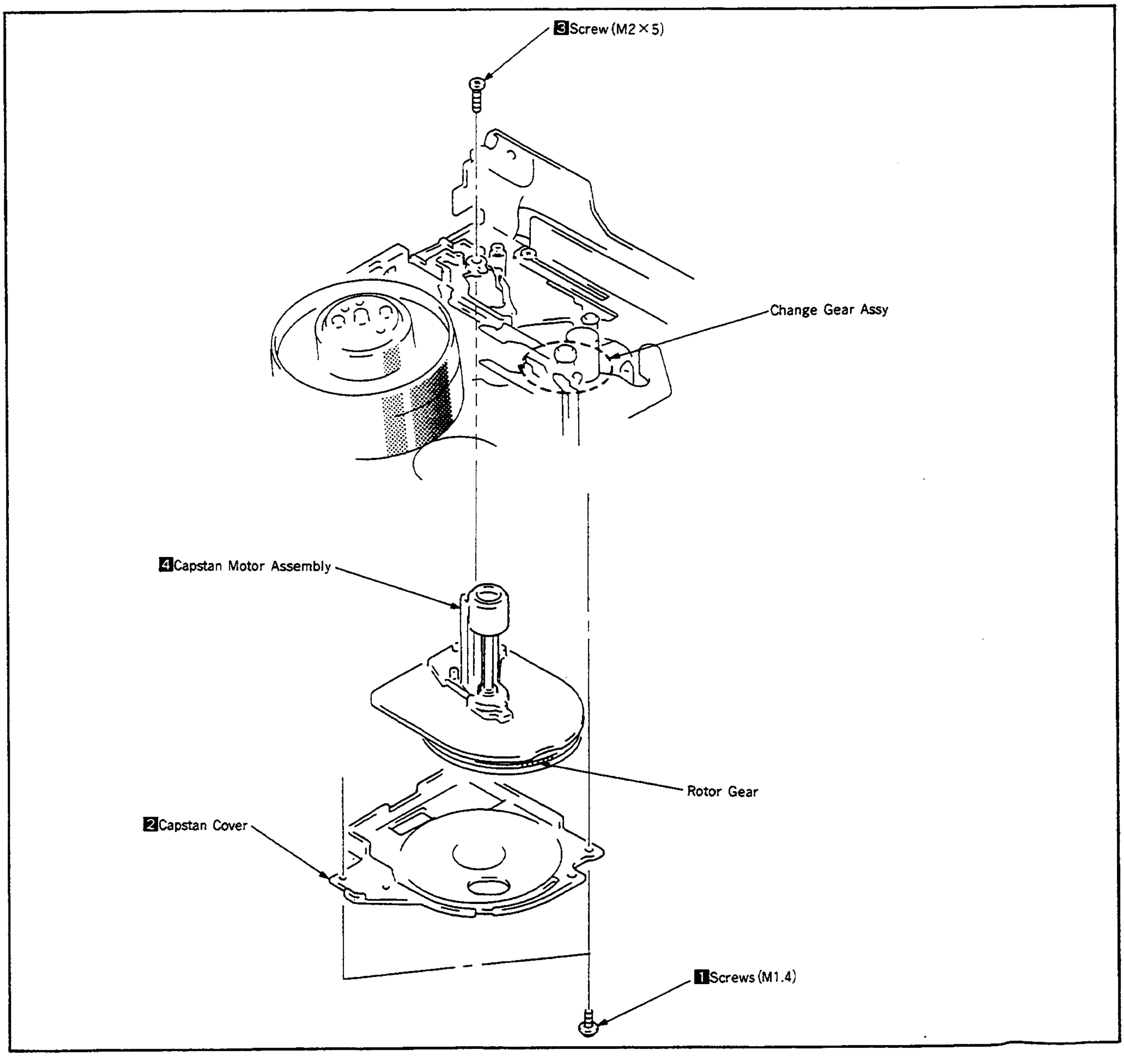

3 Screw (M2 × 5)
Change Gear Assy
4 Capstan Motor Assembly
Rotor Gear
2 Capstan Cover
1 Screws (M1.4)

Fig. 11

3-5. TAKE-UP REEL TABLE ASSEMBLY AND T- SOFT ASSEMBLY (Fig. 12)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Remove the take-up reel table assembly **1**.
4) Remove the T soft assembly **2**, then the T soft arm **3**.

2. Mounting

1) Mount the T soft arm **3** with its long hole ⓒ engaged with the boss ⓓ of LS chassis.
2) Mount the T soft assembly **2** with its tab ⓐ engaged with a square hole ⓑ of T soft arm, as shown in Fig. a.
3) Mount the take-up reel table assembly **1** and rotate it toward the arrow Ⓐ to be latched with T hard claw.
4) Referring to 3-1. mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

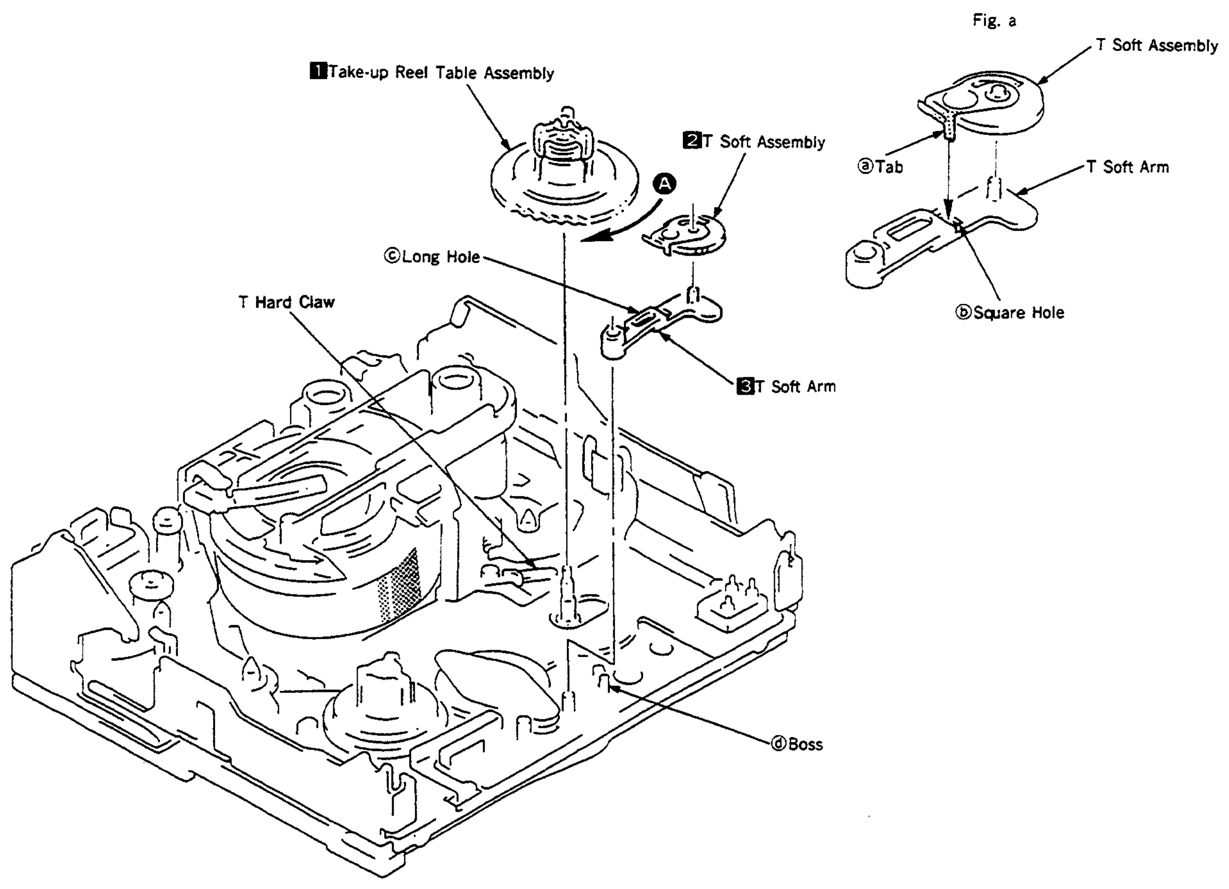


Fig. a
T Soft Assembly
ⓐTab
T Soft Arm
ⓑSquare Hole
1Take-up Reel Table Assembly
2T Soft Assembly
Ⓐ
ⓒLong Hole
T Hard Claw
3T Soft Arm
ⓓBoss

Fig. 12

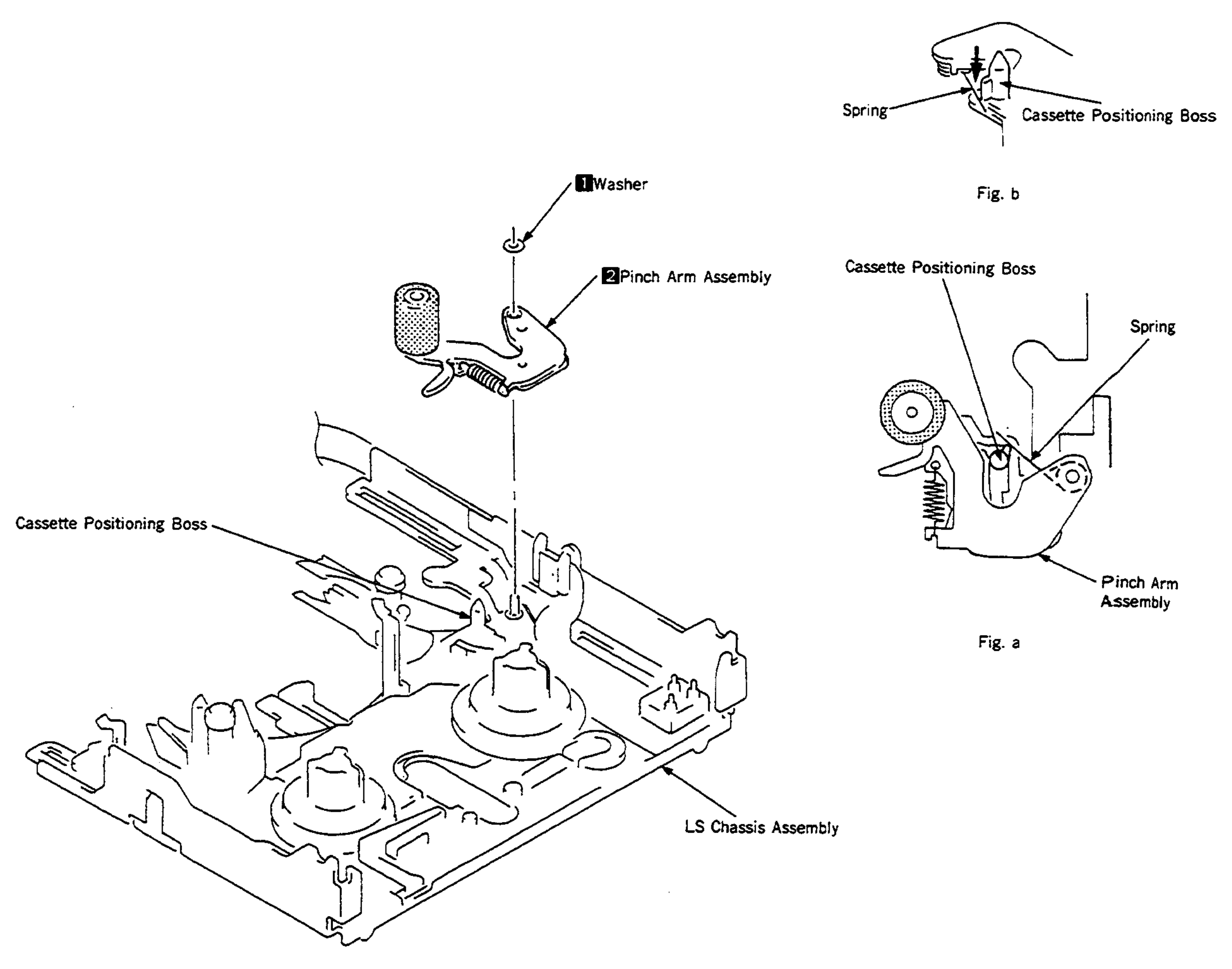
3-6. PINCH ARM ASSEMBLY (Fig. 13)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Select the READY mode.
3) Remove a washer **1**, then the pinch arm assembly **2**.

2. Mounting

1) Select the READY mode.
2) Hooking a spring of pinch arm assembly **2** to the casse positioning boss on the chassis, mount the pinch arm asser bly on the shaft of LS chassis assembly as shown in Fig. a.
3) Push in the spring with tweezers up to the root of boss as shown in Fig. b.
4) Mount the washer **1**.
5) Referring to 1-1, mount the cassette compartment assembly.



Spring
Cassette Positioning Boss
1 Washer
2 Pinch Arm Assembly
Cassette Positioning Boss
Spring
Cassette Positioning Boss
Pinch Arm Assembly
LS Chassis Assembly

Fig. b

Fig. a

Fig. 13

LS CHASSIS ASSEMBLY (Fig. 14)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Remove a screw 1, TG-5 base holder 2, and LS flexible board 3.
5) Remove a lock washer 4, then the gooseneck as sembly 5.
6) Remove four screws 6, then the LS chassis assembly 7.

2. Mounting

1) Select the USE mode.
2) Confirm that the T hard claw and the outsert on the back of LS chassis are positioned as shown in Fig. a. (The T hard claw must be higher than corner ⓐ of chassis hole.) If not high, turn the outsert in the arrow direction while pushing the T hard claw from LS chassis to the chassis.
3) Sliding the GL slider, align the top edge of long hole ⓑ in GL slider with the edge face ⓒ of LS chassis hole as shown in Fig. b.
4) Mount the LS chassis assembly 7 on the chassis.

Note : At this time, aligh a dowel ⓓ on LS chassis with a long hole ⓔ of No.7 guide on chassis, a long hole of GL slider with a GL arm pin, a groove of LS cam plate with an LS arm pin respectively as shown in Fig. c and d.

5) Tighten four screws 6.
6) Mount the LS flexible board 3 and TG-5 base holder 2,then tighten the screw 1.
7) Mount the Gooseneck assembly 5 and fix it with a washer 4.

Note : Using the mode selector, confirm that loading and unloading are performed smoothly.

8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.
10) Referring to 1-1, mount the cassette compartment assembly.

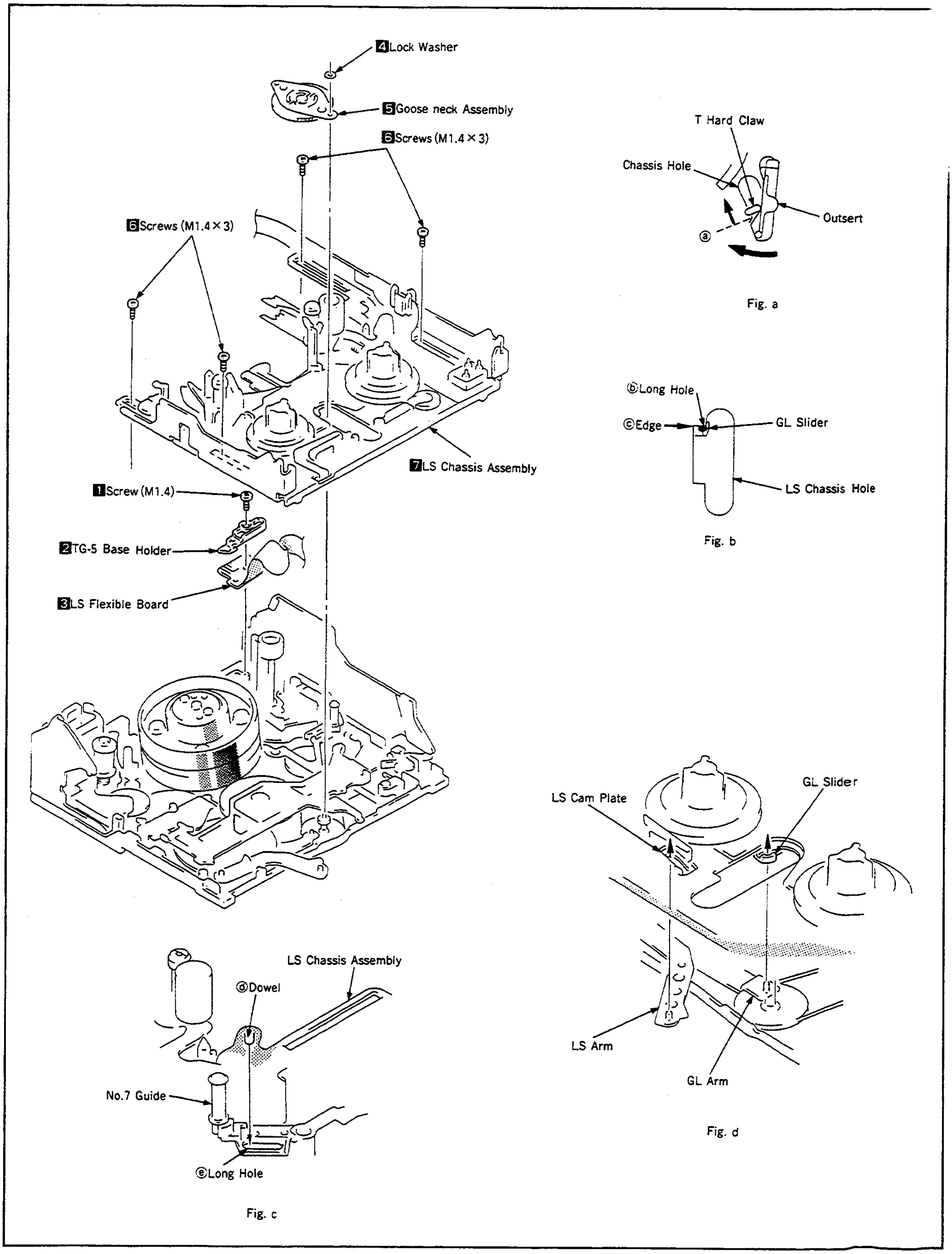

4 Lock Washer
5 Goose neck Assembly
6 Screws (M1.4 × 3)
6 Screws (M1.4 × 3)
7 LS Chassis Assembly
1 Screw (M1.4)
2 TG-5 Base Holder
3 LS Flexible Board
T Hard Claw
Chassis Hole
Outsert
ⓐ
ⓑ Long Hole
ⓒ Edge
GL Slider
LS Chassis Hole
LS Cam Plate
GL Slider
LS Arm
GL Arm
LS Chassis Assembly
ⓓ Dowel
No.7 Guide
ⓔ Long Hole

Fig. a

Fig. b

Fig. c

Fig. d

Fig. 14

3- GUIDE BASE T ASSEMBLY AND GUIDE BASE S ASSEMBLY (Fig. 15, 16)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Push in the GL slider 1 toward the arrow Ⓐ, and remove the guide base T assembly 2 and guide base S assembly 3 from the guide rail respectively as shown in Fig. 15.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T sofr assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

6) Turning the guide base T assembly 2 and guide base S assembly 3 respectively, align the shaft to hole to remove as shown in Fig. a.

2. Mounting

1) Turning the guide base T assembly 2 and guide base S assembly 3 respectively, align the shaft with a hole to mount as shown in Fig. a (Fig. 15).
2) On the back side of chassis, insert the guide arm T assembly 4, guide arm S assembly 5 and GL slider 1 from position shown in Fig.b to position shown in Fig. c. Also, aligning the guide base T assembly 2 and guide base S assembly 3 with the respective guide rails, push in the GL slider 1 toward the arrow Ⓑ as shown in Fig. 16.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.

Note : At this time, confirm that the T soft assembly is surely engaged with the T soft arm.

6) Referring to 1-1, mount the cassette compartment assembly.

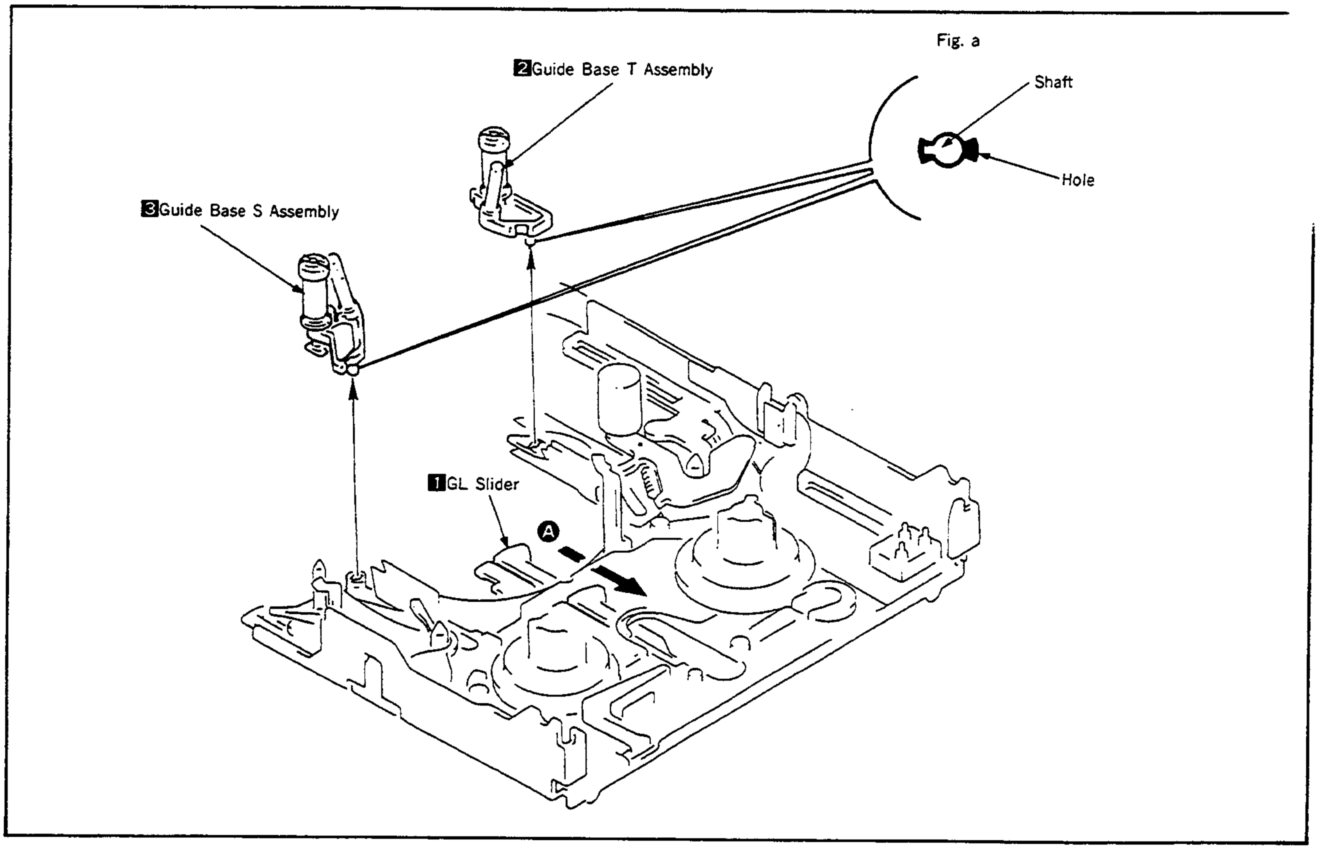


Fig. a
2 Guide Base T Assembly
Shaft
Hole
3 Guide Base S Assembly
1 GL Slider
A

Fig. 15

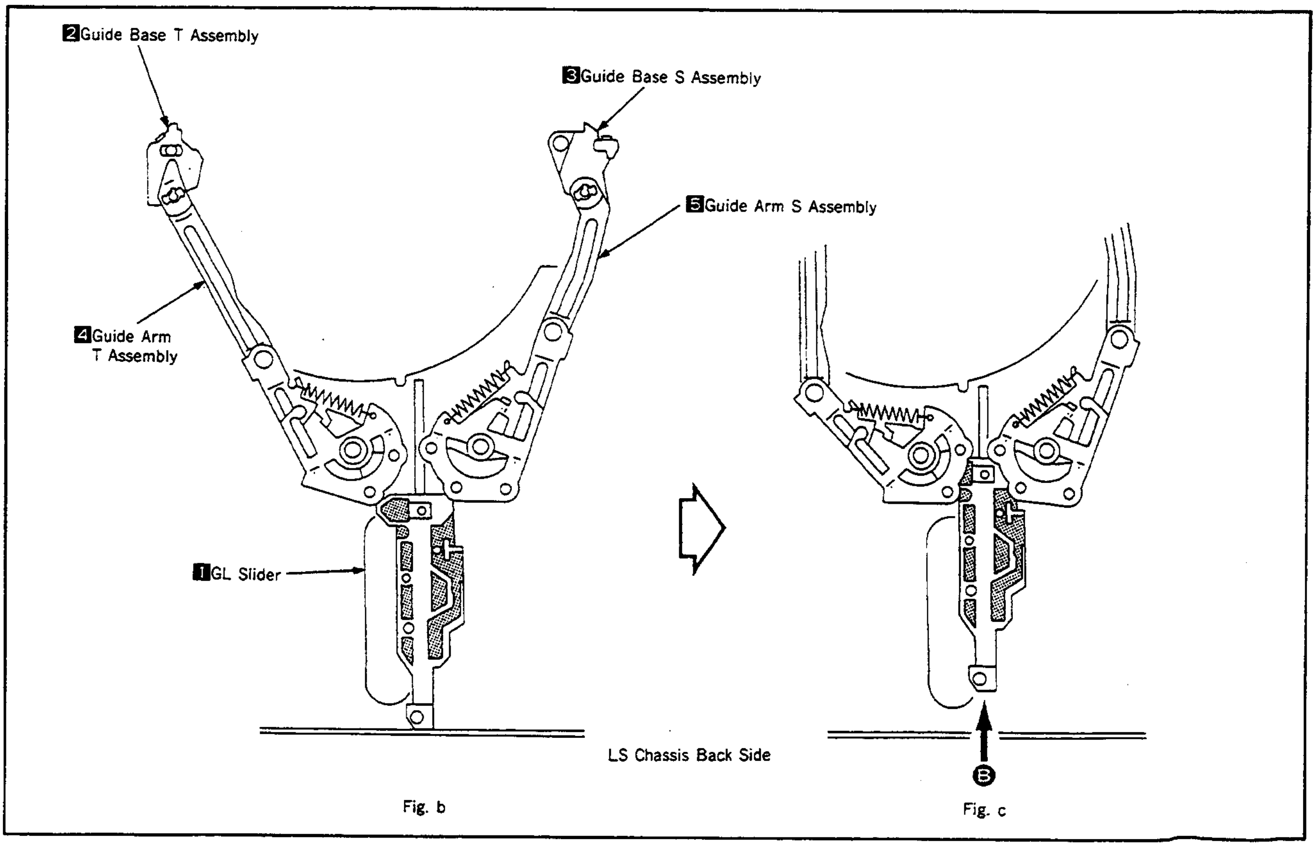

2 Guide Base T Assembly
3 Guide Base S Assembly
5 Guide Arm S Assembly
4 Guide Arm T Assembly
1 GL Slider
LS Chassis Back Side
B

Fig. b

Fig. c

Fig. 16

3 GUIDE ARM T ASSEMBLY AND GUIDE ARM S ASSEMBLY (Fig. 17)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base T assembly and guide base S assembly.
6) Remove lock washers ❶, then the guide arm T assembly ❷ and guide arm S assembly ❸ respectively from the back side of chassis.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assmbly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

2. Mounting

1) Mount the guide arm T assembly ❷ and guide arm S assembly ❸, then fix them with a lock washer ❶ respectively.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

2) Referring to 3-8, mount the guide base T assembly, guide-base S assembly and GL slider.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

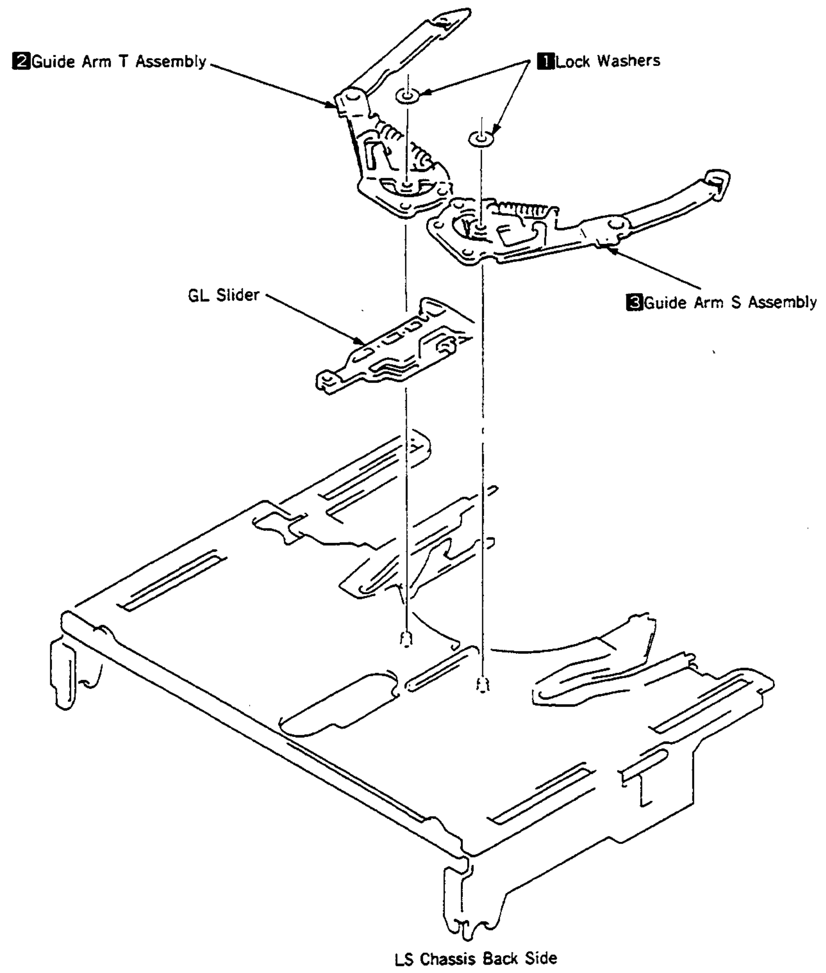


Fig. 17

3-10. SUPPLY REEL TABLE ASSEMBLY AND TG-1 ARM ASSEMBLY (Fig. 18)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base S assembly.
6) Remove a screw **1**, then the string **2** from the supply reel table assembly **3**. For easy removal of string block **4**, insert a flat-blade screwdriver into a groove ⓐ and push it up (Fig. a).
7) Remove the supply reel table assembly **3**.
8) Remove a tension coil spring **5**.
9) Turn the TG-1 arm assembly **6** up to a portion ⓒ of LS chassis hole in the arrow Ⓐ direction so that its tab ⓑ can be disengaged (Fig. b).

2. Mounting

1) Pushing the S soft brake **7** toward the arrow Ⓑ, mount thesupply reel table assembly **3**.
2) Route the string **2** under the TG-1 arm asembly **6**, andinsert the tab ⓑ of TG-1 arm assembly into the LS chassis hole ⓒ, then turn the TG-1 arm assembly in the reverse direction of arow Ⓐ (Fig. b).
3) Wind the string **2** along the groove of supply reel t assembly **3** (Fig. a).

Note : Do not curl the string extremely. Also, avoid adhesion oil, otherwise the image will be distorted.

4) Using the FWD B.T. adjusting driver (Ref. No. J-15), shift the string block **4** toward the arrow Ⓒ and tighten the screw **1** (Fig. a).
5) Engage the tension coil spring **5** to the chassis hook.

Note : Confirm that the string **2** is surely wound around the groove of supply reel table assembly **3** (Fig.a).

6) Referring to 3-8, mount the guide base S assembly.
7) Referring to 3-7, mount the LS chassis assembly.
8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.

Note : At this time, confirm that the T soft assembly is surely engaged with the T soft arm. (Refer to 3-5 Take-up Reel Table Assembly and Take-up Soft Assembly.)

10) Referring to 1-1, mount the cassette compartment assembly.

Note : Referring to 3-22, adjust the tension regulator position.

Note : Referring to 3-23, adjust the forward back tension.

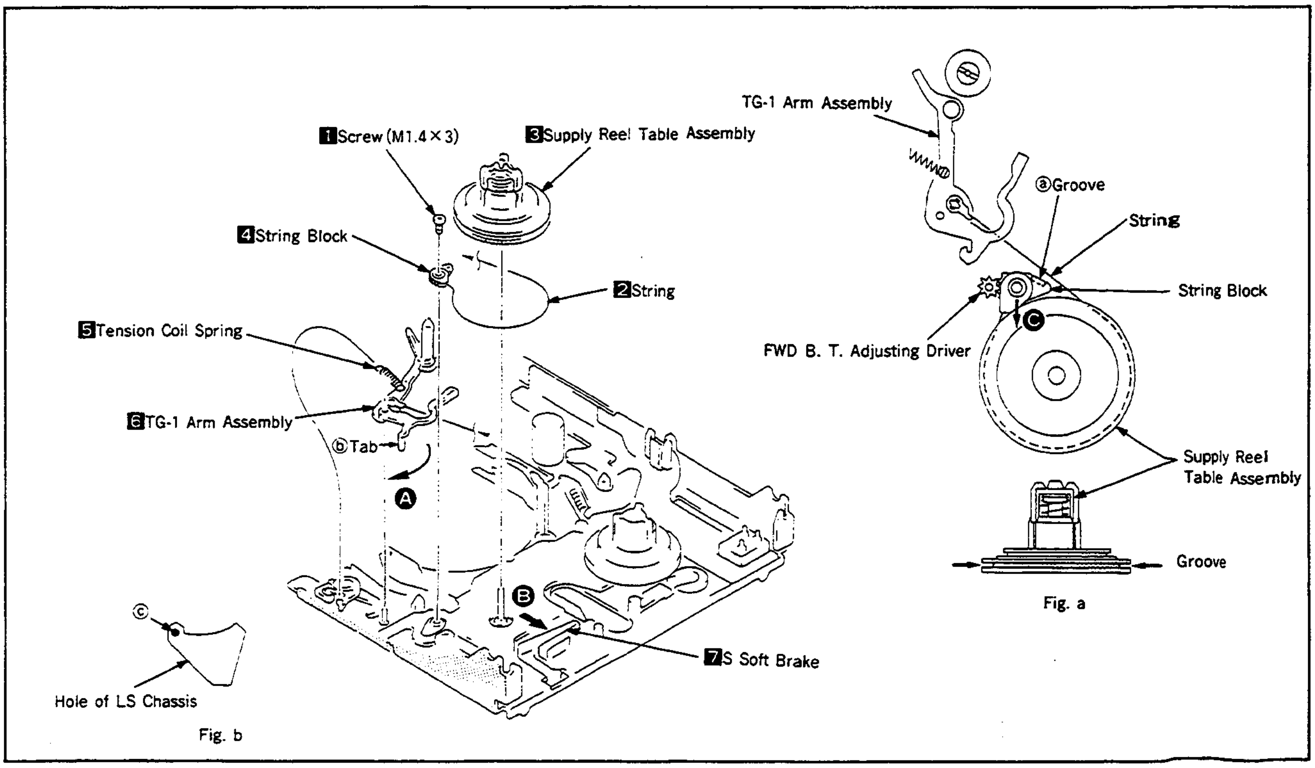

1 Screw (M1.4 × 3)
3 Supply Reel Table Assembly
4 String Block
2 String
5 Tension Coil Spring
6 TG-1 Arm Assembly
ⓑ Tab
Ⓐ
Ⓑ
7 S Soft Brake
ⓒ
Hole of LS Chassis
Fig. b
TG-1 Arm Assembly
ⓐ Groove
String
String Block
FWD B. T. Adjusting Driver
Ⓒ
Supply Reel Table Assembly
Groove
Fig. a

Fig. 18

3 . TG-2 ROLLER ASSEMBLY (Fig. 19)

1. Removal

1) Remove the TG-2 roller assembly ❶ .
2) Remove a compression coil spring ❷ .

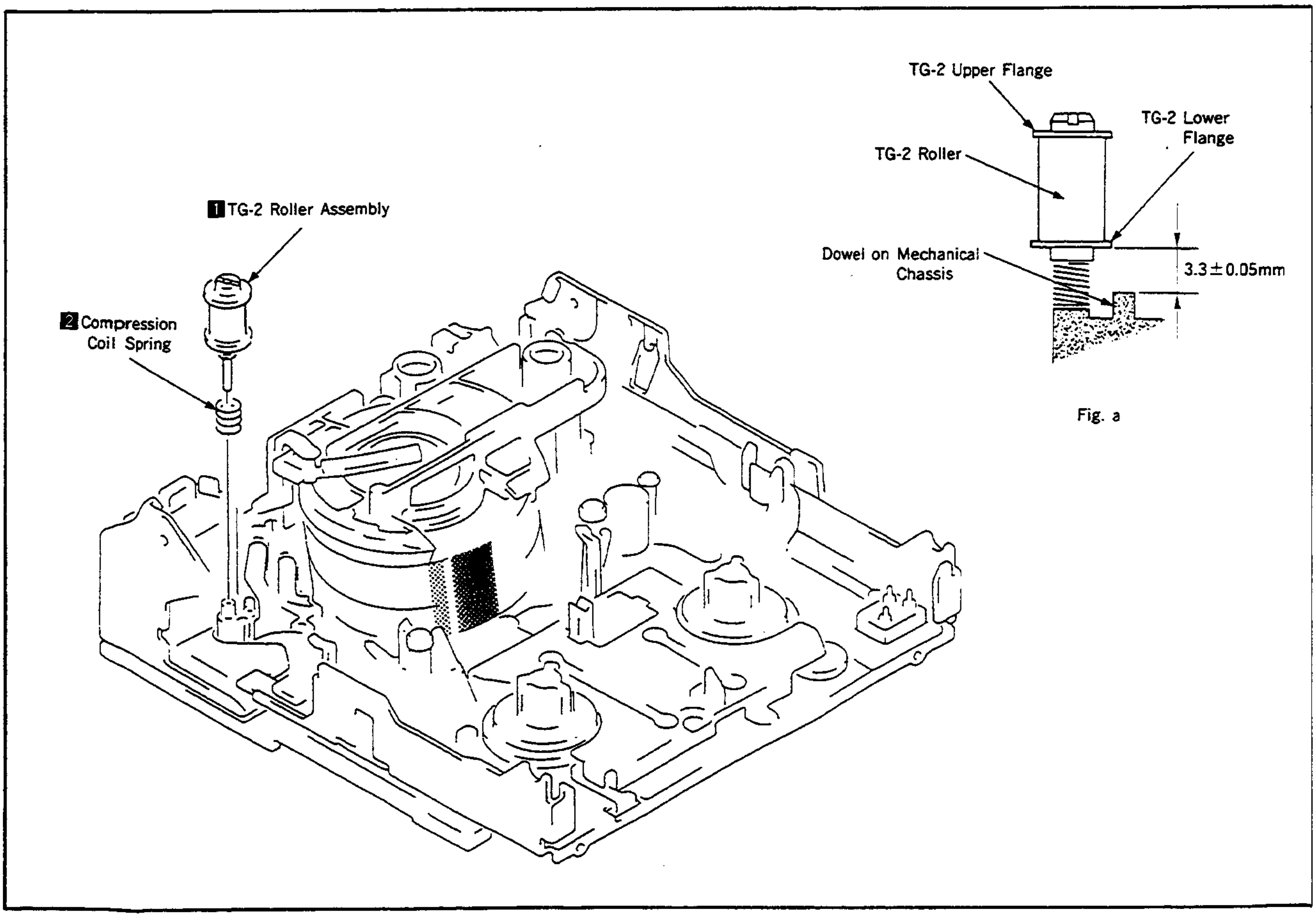
2.Mounting

1) Insert a compression coil spring ❷ into the boss on chassis.
2) Rotate gently the TG-2 roller assembly ❶ until the screw is engaged.

3. Presetting of TG-2 Roller Height (Fig. a)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3. 3 ± 0. 05mm.

Note : After adjustment, perform 4. TAPE PATH ADJUSTMENT.



❶TG-2 Roller Assembly
❷Compression Coil Spring
TG-2 Upper Flange
TG-2 Roller
TG-2 Lower Flange
Dowel on Mechanical Chassis
3.3±0.05mm

Fig. a

Fig. 19

3-12. TG-7 ARM ASSEMBLY (Fig. 20)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Raise a portion ⓐ of TG-7 arm Leaf spring ❶ in arrow direction with a flat-blade screwdriver or tweezers to disengage the tab from the chassis, then remove the TG-7 arm Leaf spring as shown in Fig. a.
6) Remove the TG-7 assembly ❷ from the shaft of mechanical-chassis.

2. Mounting

1) Mount the TG-7 arm assembly ❷ to the shaft of mechanic chassis.
2) Mount the TG-7 arm Leaf spring ❶ to the mechanicalchasis.
   * Push in the tab of Leaf spring until it clicks into a detent ofchassis (Fig. a).
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartmnet assembly.

Note : After mounting, perform 4. TAPE PATH ADJUSTMENT.

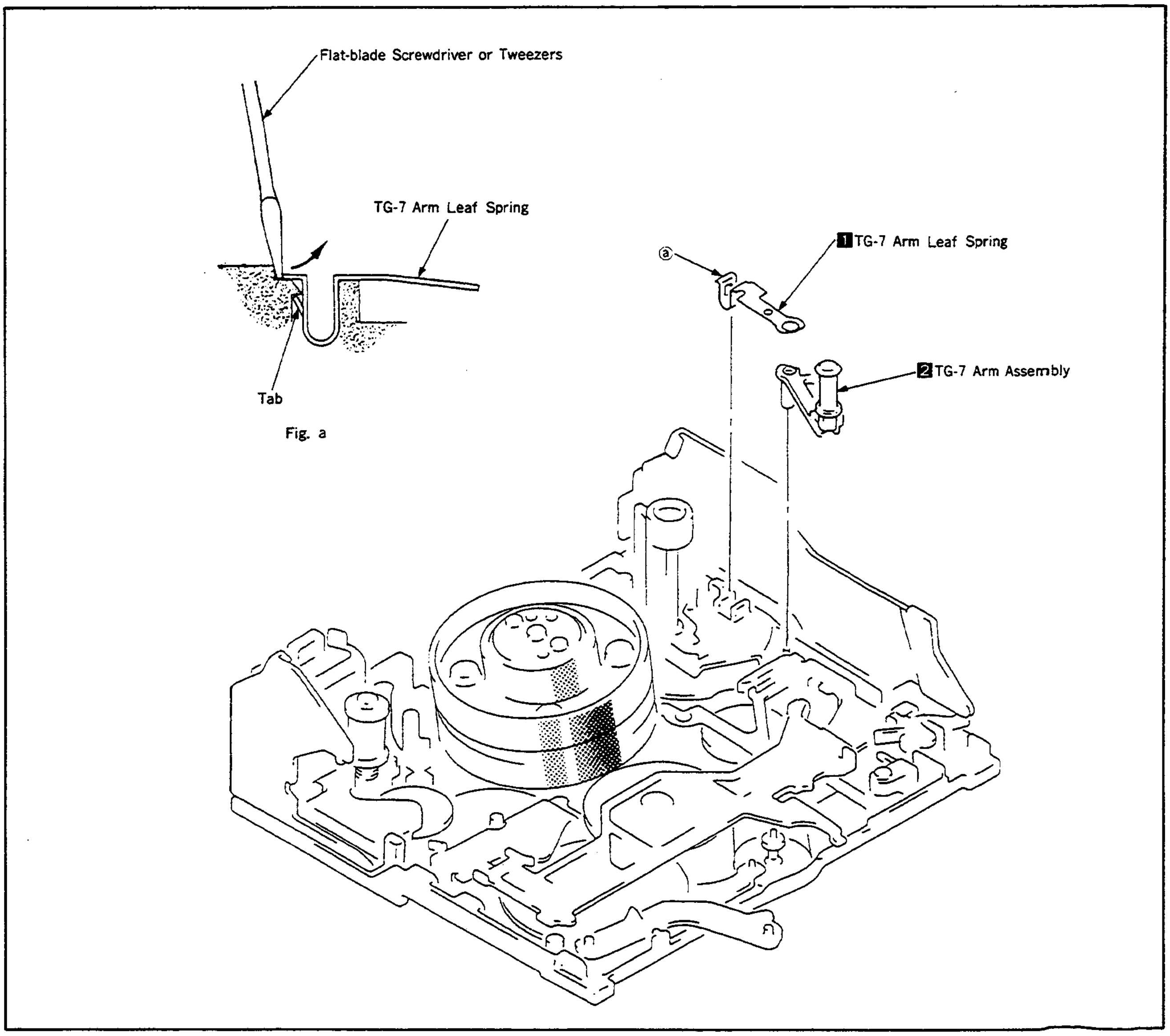


Fig. a

Fig. 20

3 . LM MOTOR ASSEMBLY (Fig. 21)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Select the LOAD mode (at the position where the FF arm assembly is not above the screw ❶).
6) Remove two screws ❶, then the LM motor assembly ❷.

2. Mounting

1) Aligning the dowel ⓐ of LM motor assembly ❷ with the hole ⓑ of mechanical chassis, mount the LM motor assembly with its hole ⓒ inserted into the mechanical chassis shaft ⓓ.
2) Tighten two screws ❶.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

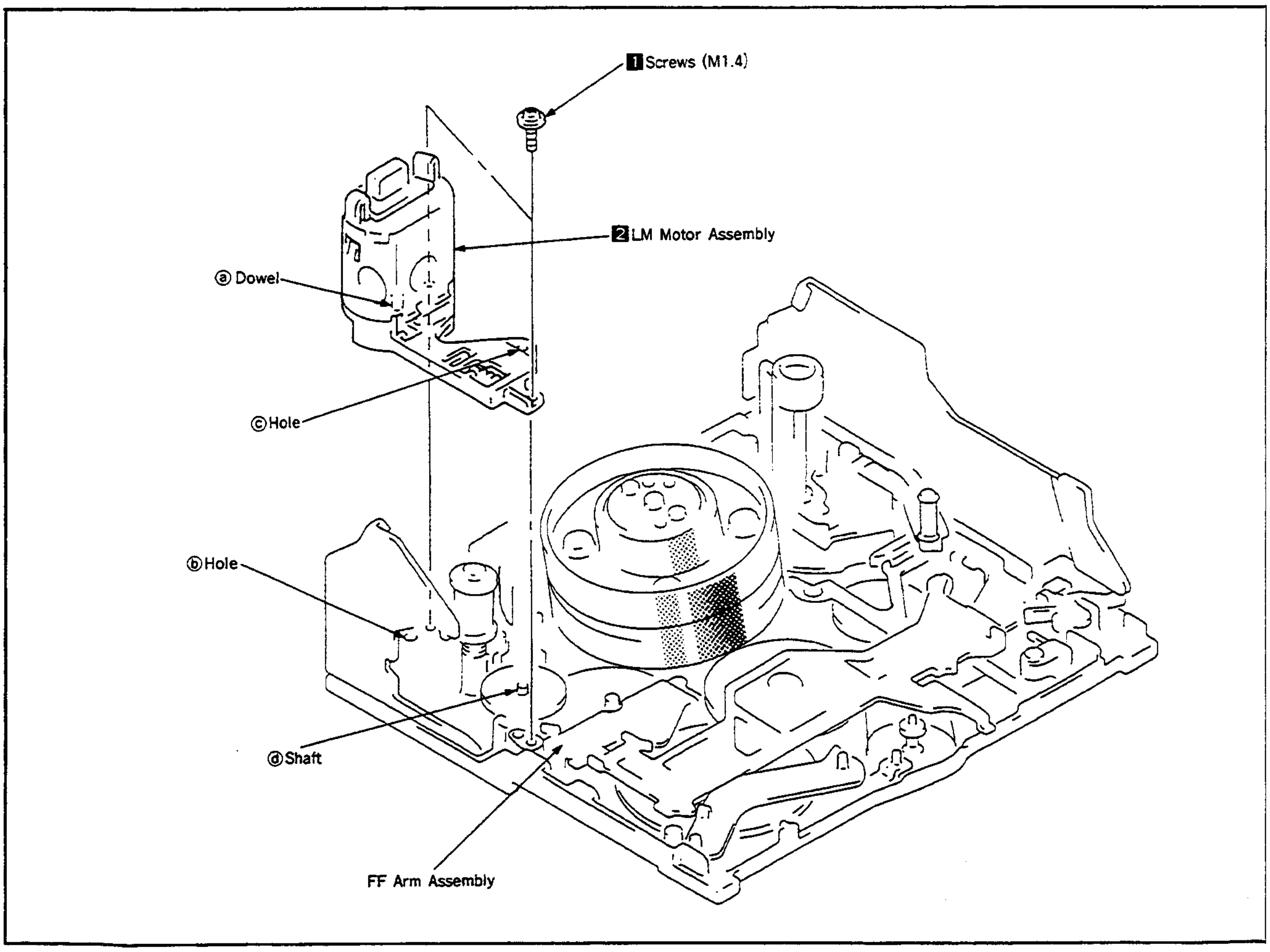


Fig. 21

3-14. LS ARM (Fig. 22)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the proctector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove the LS arm ❶ from the shaft of mechanical chassis.

Note : Take care not to drop the LS roller ❷.

2. Mounting

1) Mount the LS arm ❶ meeting with mechanical chassis sh. and cam groove.

Note : Move the LS arm ❶ in arrow direction to confirm that the LS roller ❷ is surely inserted.

2) Referring to 3-7, mount the LS chassis assembly.
3) Referring to 3-2, mount the protector base assembly.
4) Referring to 3-1, mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

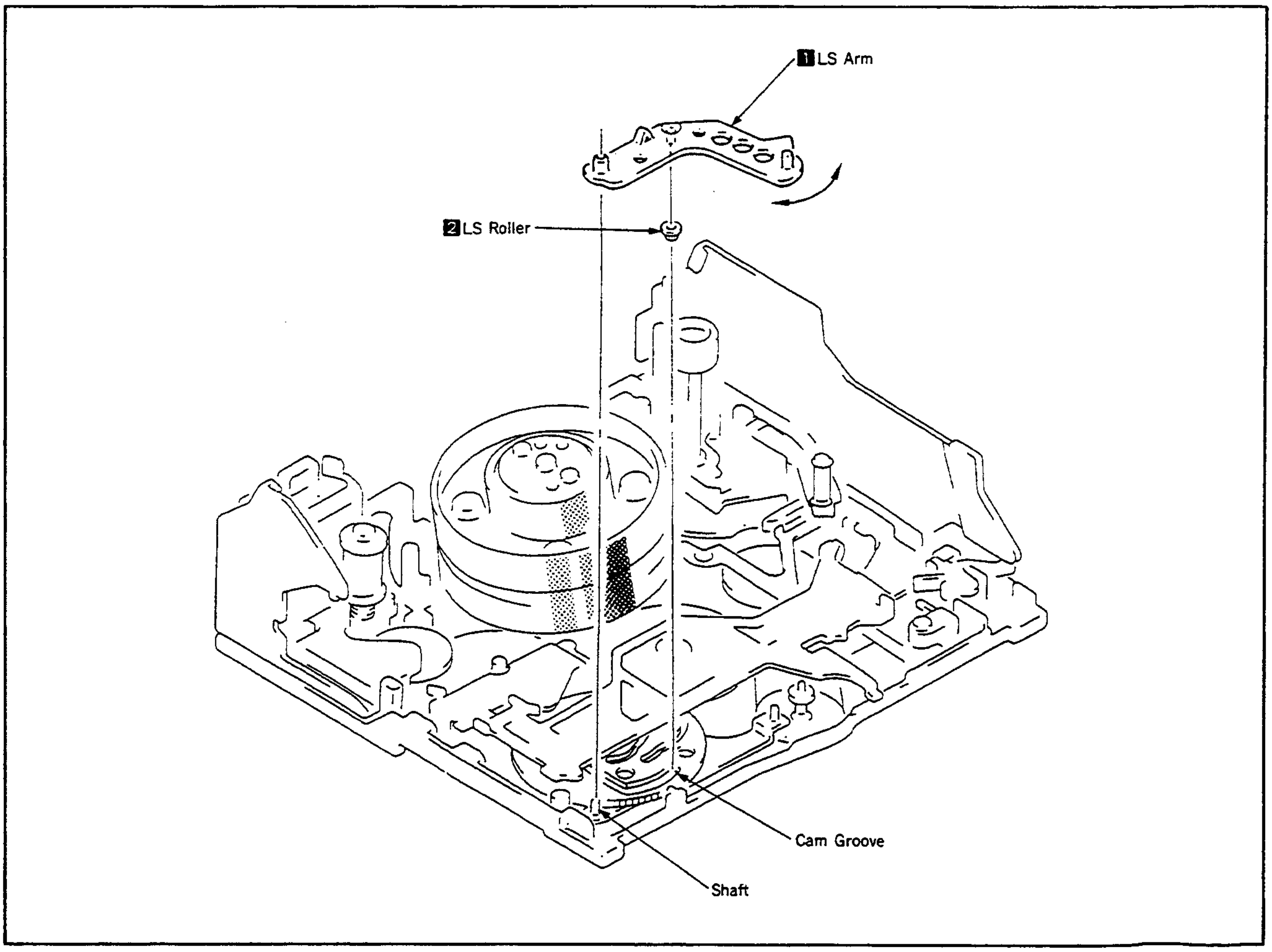


Fig. 22

. M SLIDER ASSEMBLY (Fig. 23)

Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove two screws ❶, then the gear holder ❷.
6) Remove two lock washers ❸, then the M slider assembly ❹.

2. Mounting

1) Mount the M slider assembly ❹, aligning long holes ⓐ and ⓑ of M slider assembly with shafts ⓒ and ⓓ of mechanical chassis, and a long hole ⓔ with shaft ⓕ of press arm assembly, and also shaft ⓖ with outer groove ⓗ of cam respectively.
2) Mount two lock washers ❸.
3) Mount the gear holder ❷ with its outserts ⓘ and ⓙ inserted into holes in the mechanical chassis.
4) Tighten two screws ❶.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.

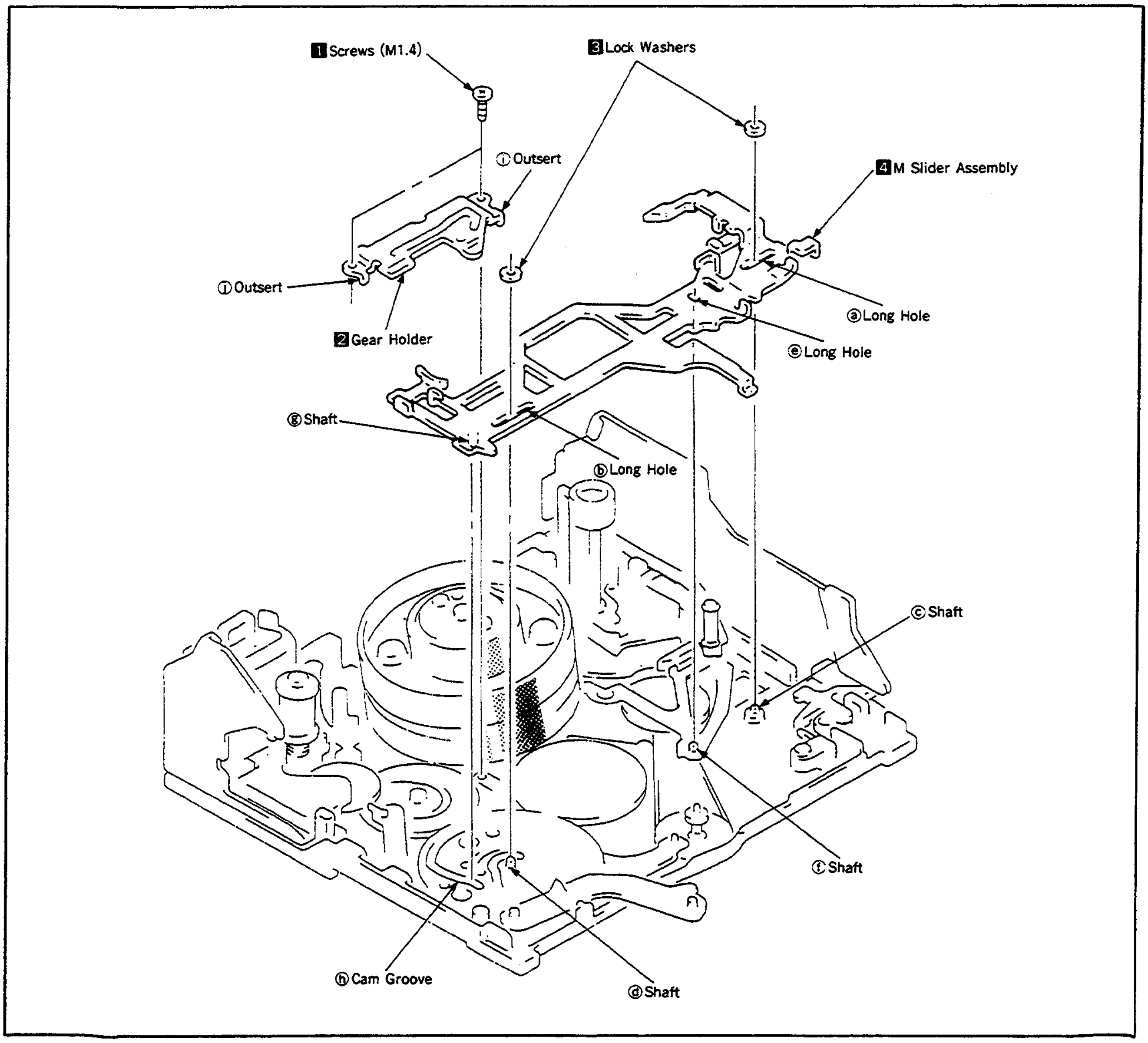

❶Screws (M1.4)
❸Lock Washers
ⓙ Outsert
❹M Slider Assembly
ⓘ Outsert
ⓐLong Hole
❷Gear Holder
ⓔLong Hole
ⓖShaft
ⓑLong Hole
ⓒShaft
ⓕShaft
ⓗCam Groove
ⓓShaft

Fig. 23

3-16. PINCH PRESS ARM ASSEMBLY (Fig. 24)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assemvly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove a lock washer **1**, then pinch press arm assembly **2**.

2.Mounting

1) Mount the pinch press arm assembly **2**, inserting its sh ⓐ into the cam groove ⓑ of HC drive arm, and hole ⓒ in the shaft ⓓ of mechanical chassis.
2) Mount the lock washer **1**.
3) After mounting, shift the pinch press arm assembly toward the arrow direction.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-3, mount the drum assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

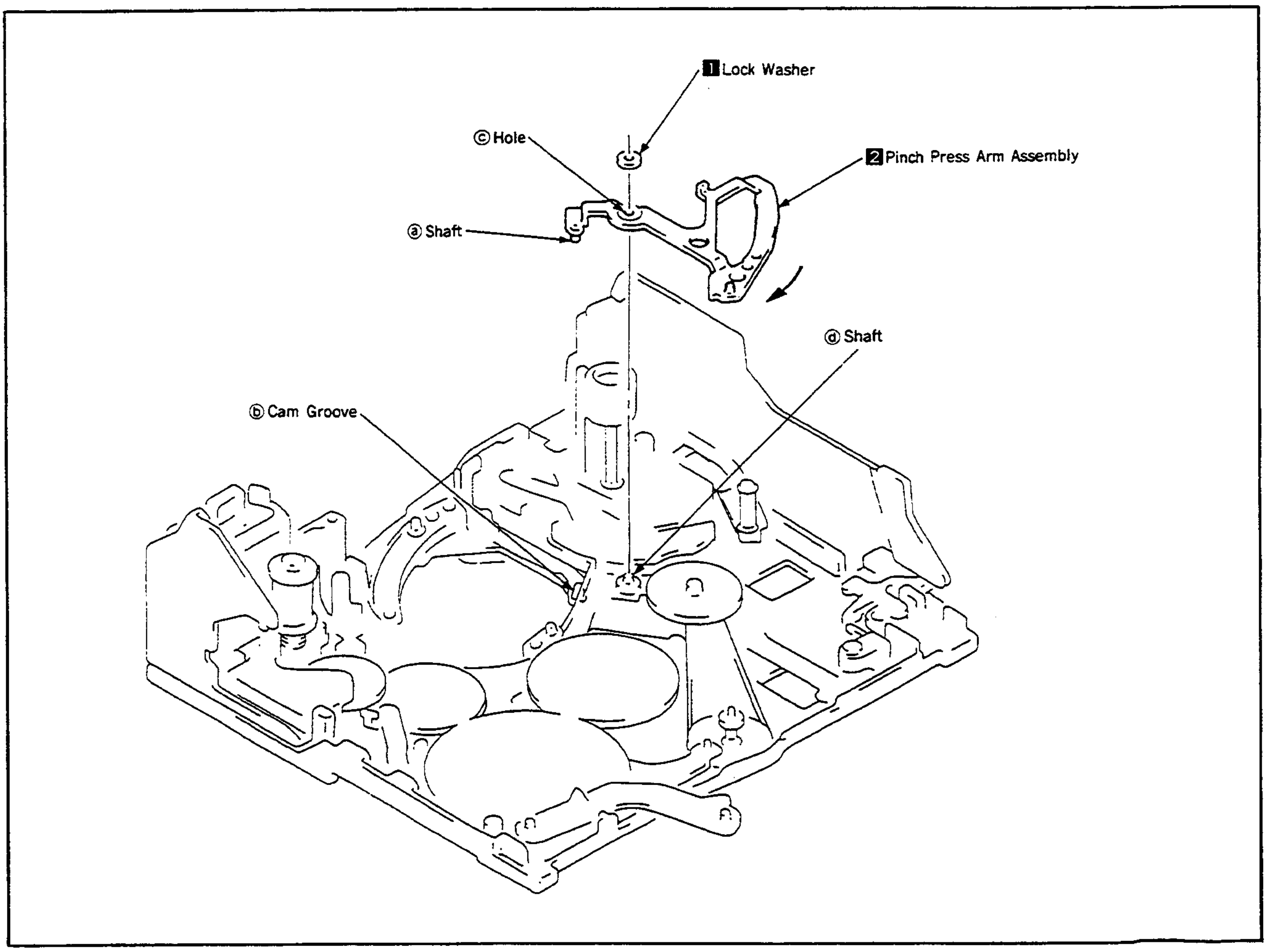


Fig. 24

. CAM (Fig. 25)

emoval

Referring to 1-1, remove the cassette compartment assembly.
Referring to 3-1, remove the Retainer, Gooseneck assembly.
Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove the cam **1**.

2. Mounting

1) Referring to 3-13, remove the LM motor assembly.

Note : Take care not to allow grease of LM motor assembly to stick to the TG-2 roller assembly.

2) Mount the cam **1**, aligning its center hole with shaft of mechanical chassis, and the cam groove with the shaft of GL arm assembly. At this time , make sure that the ▲ mark on L gear B is aligned with that on the cam and also a recess is aligned with the phase aligning hole respectively as shown in Fig. a.

Note : Apply grease to the cam groove if it scarecely remains.

3) Mount the LM motor assembly.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-14, mount the LS arm assembly.
6) Referring to 3-7, mount the LS chassis assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

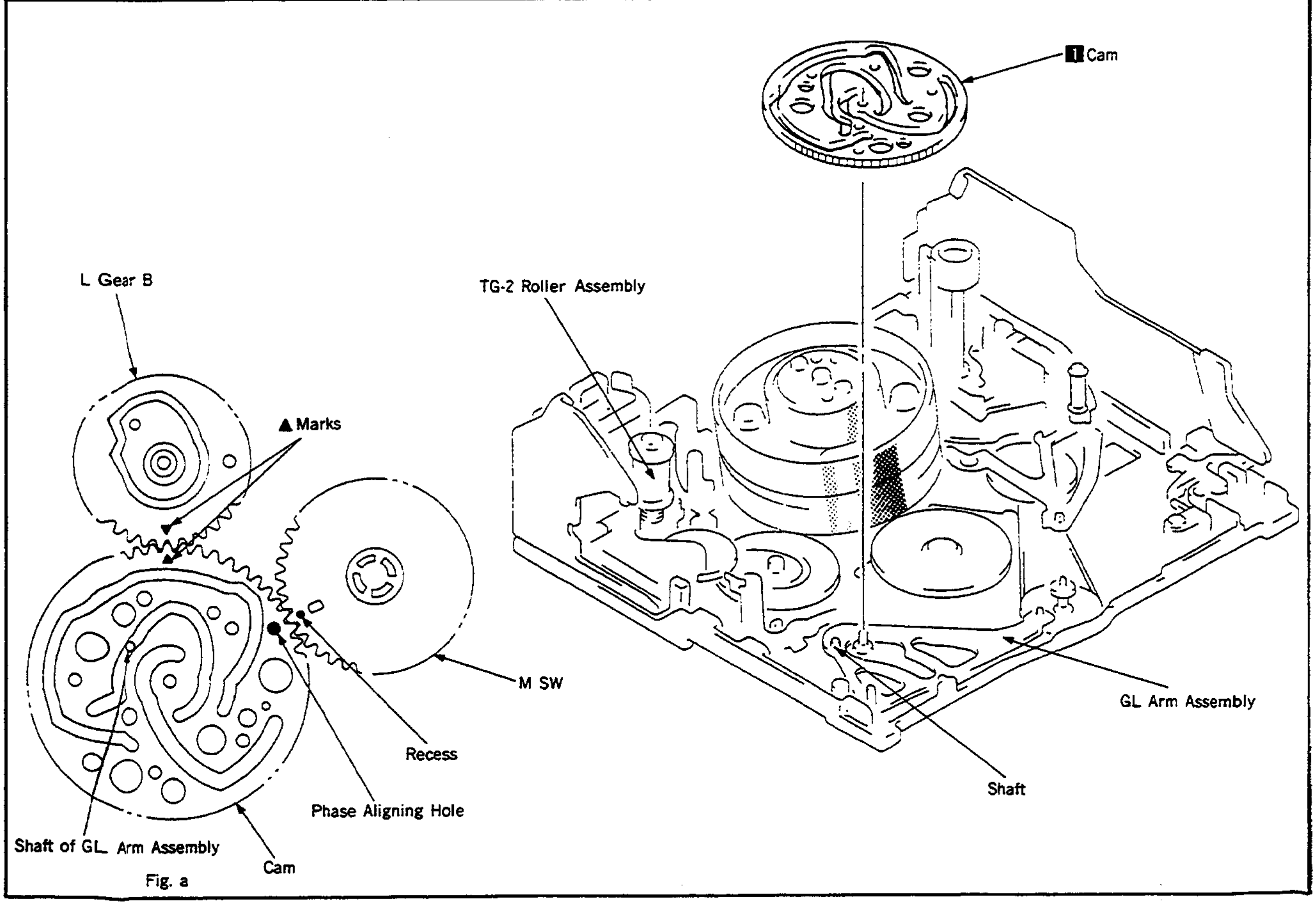


Fig. a

Fig. 25

3-18. GL ARM ASSEMBLY (Fig. 26)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Remove the GL arm assembly 1.

2. Mounting

1) Mount the GL arm assembly 1 with its hole ⓐ inserted in the shaft ⓑ of mechanical chassis.
2) Referring to 3-17, mount the cam.
3) Referring to 3-15, mount the M slider assembly.
4) Referring to 3-14, mount the LS arm assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.

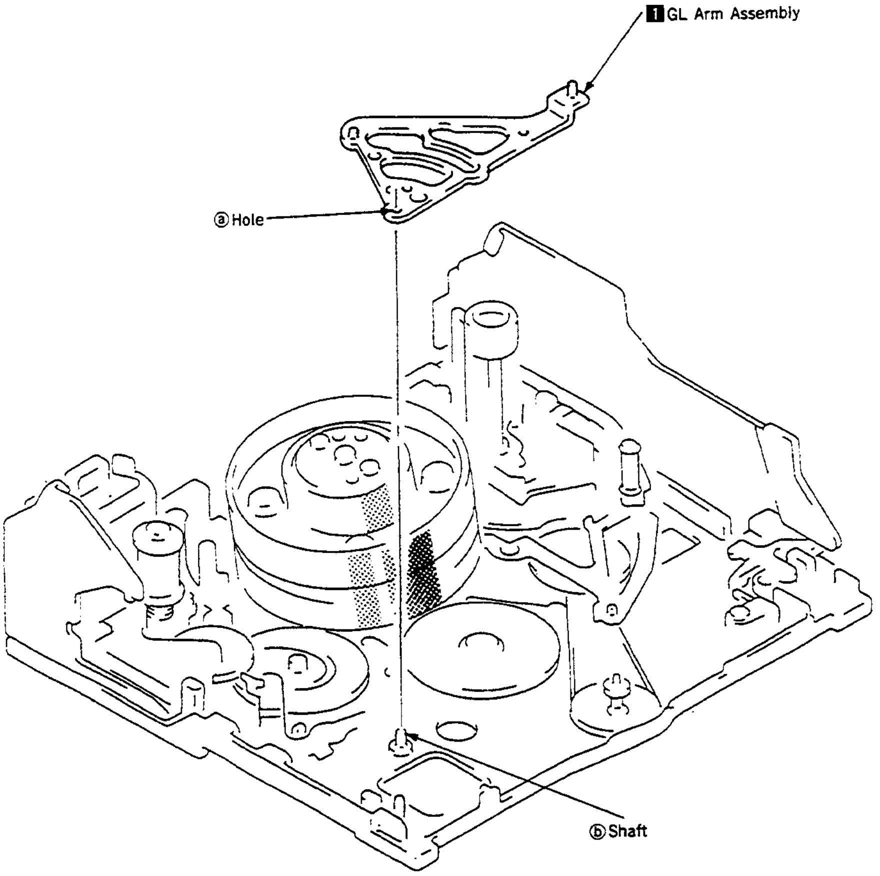


Fig. 26

9. L GEAR A AND L GEAR B (Fig. 27)

Removal

Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Referring to 3-13, remove the LM motor assembly.
9) Remove the FF arm assembly ❶.
10) Remove the L gear A ❷.
11) Remove the L gear B ❸.

2. Mounting

1) Insert the L gear B ❸ into the shaft of mechanical chassis. (At this time, the phase aligning mark ▲ should be faced toward the cam mounting shaft ⓐ.)
2) Insert the L gear A ❷ into the shaft of mechanical chassis.
3) Mount the FF arm assembly ❶ with its two shafts inserted into the cam groove of L gear B ❸ and the hole of mechanical chassis.
4) Referring to 3-17, mount the cam.
5) Referring to 3-13, mount the LM motor assembly.
6) Referring to 3-15, mount the M sleder assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-2, mount the protector base assembly.
10) Referring to 3-1, mount the Retainer, Gooseneck assembly.
11) Referring to 1-1, mount the cassette compartment assembly.

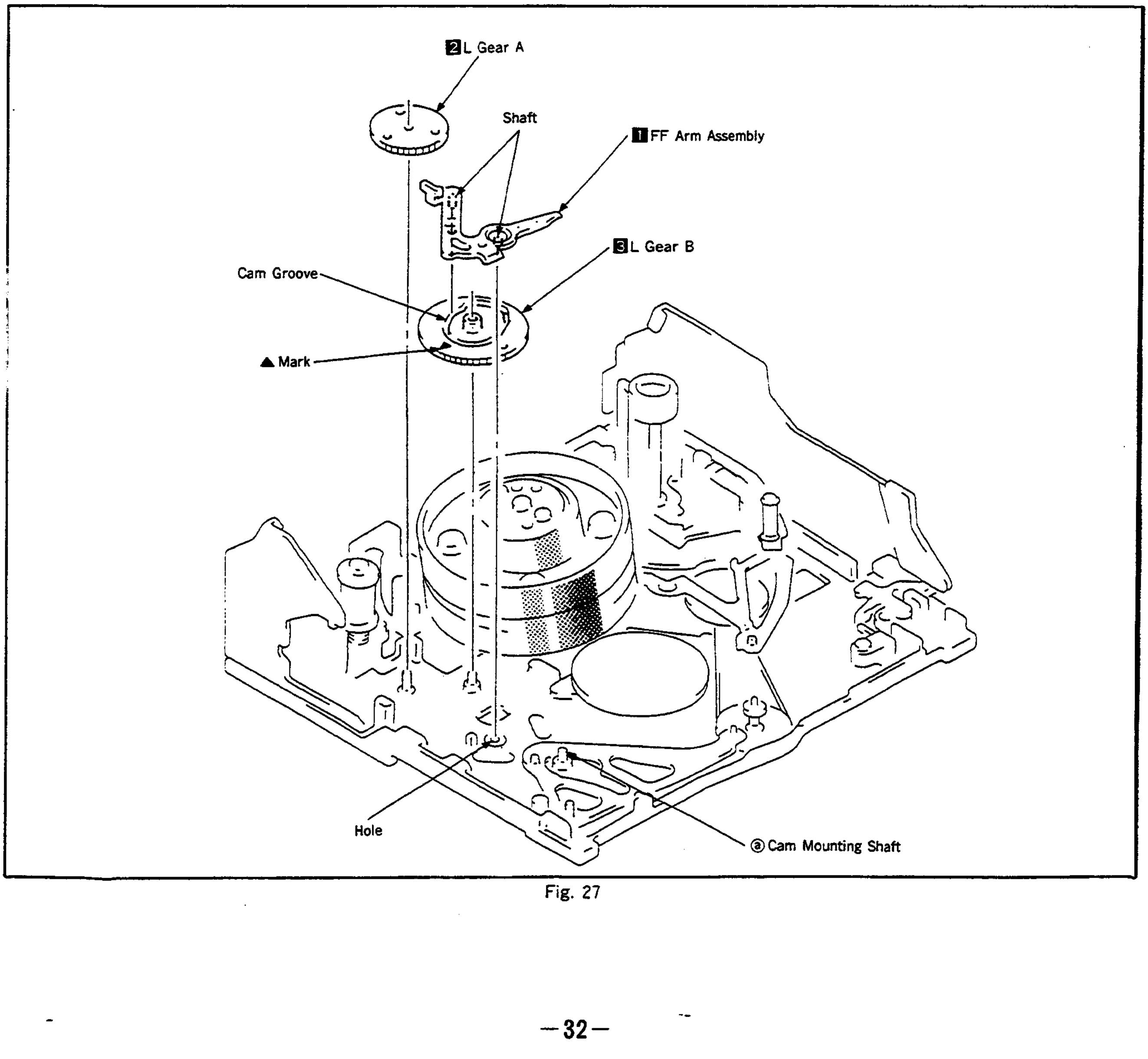


Fig. 27

3-20. RELAY PULLEY AND CHANGE GEAR ASSEMBLY (Fig. 28)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assembly.
6) Referring to 3-14, remove the LS arm assembly.
7) Referring to 3-15, remove the M slider assembly.
8) Referring to 3-17, remove the cam.
9) Referring to 3-18, remove the GL arm assembly.
10) Referring to 3-16, remove the pinch press arm assembly.
11) Remove a lock washer ❶, then remove together the Change gear assembly ❷, relay belt ❸ and relay pulley ❹.

2. Mounting

*Give one or two drips of oil to the conversion gear shaft and relay pulley shaft respectively. (Oiling range is under the neck as shown in Fig. a.)

1) Hooking the relay belt ❸ to the relay pulley ❹ and Change gear assembly ❷, mount respective parts.
   *At first, insert the relay pulley into the mechanical chassis-shaft, then the change gear assembly by engaging with the capstan motor gear.

Note : Take care not to damage the Change gear by the capstan motor gear.

2) Mount a lock washer ❶.
3) Referring to 3-16, mount the pinch press arm assembly.
4) Referring to 3-18, mount the GL arm asembly.
5) Referring to 3-17, mount the cam.
6) Referring to 3-15, mount the M slider assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-3, mount the drum assembly.
10) Referring to 3-2, mount the protector base assembly.
11) Referring to 3-1, mount the Retainer, Gooseneck assembly.
12) Referring to 1-1, mount the cassette compartment assembly.

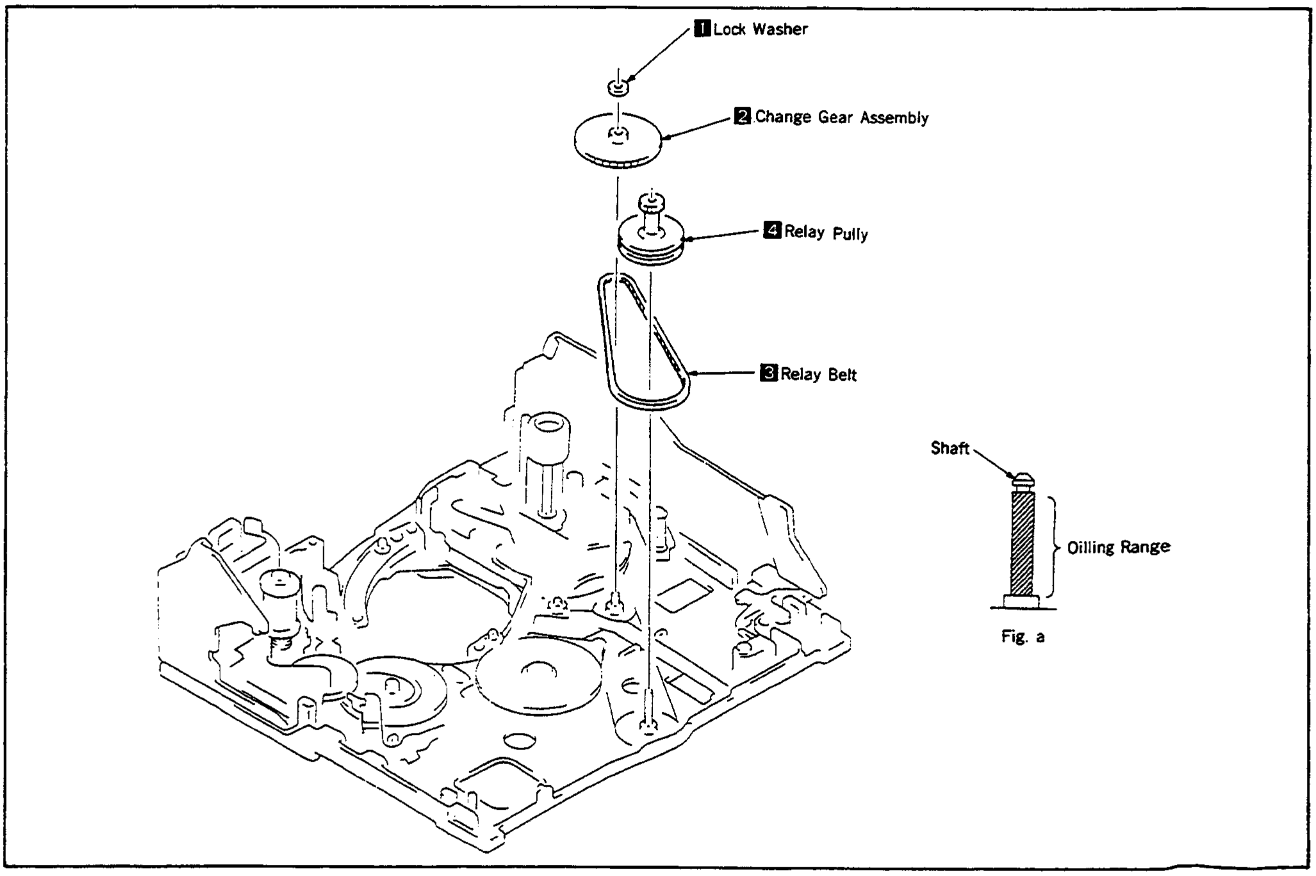


Fig. 28

3-21. ROTARY UPPER DRUM REPLACEMENT

1. Removoal

- If possible, make a recording before removal.

1) Remove the two screws 1 (Fig. 29).
2) Mount the jig 2 (Ref. No. J-10) with the two supplied screws 3, then screw the attached hexagon socket screws 4 to the jig 2. The rotary upper drum 5 will move upward and come off (Fig. 30).

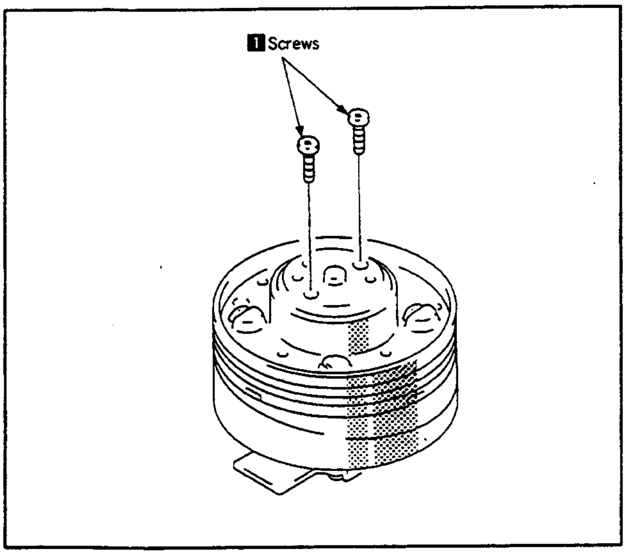


Fig. 29

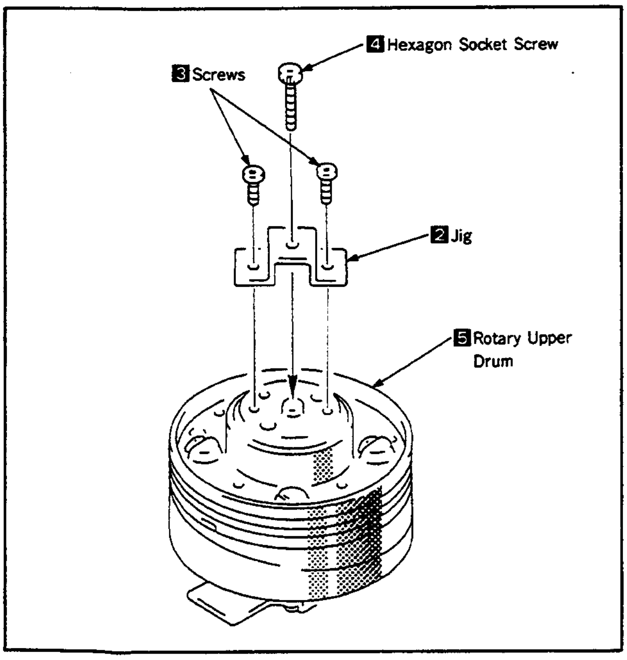


Fig. 30

2. Installation

1) Wipe clean the flange surface and the rotary upper drum 5 surface that makes contact with it, and confirm that they are free from dirt and scratches.
2) Insert the jig 6 (Ref. No. J-10) into the drum positioining hole, then set then set the rotary upper drum 5 by passing the jig through its positioning hole 7. (Fig.31)
3) Remove the jig 6 and push down the rotary upper drum 5 gently by hand. If it does not go all the way down, secure it temporarily by tightening the two screws 1 alternately (Fig.29).
4) Insert the jig 6 into the positioning hole 7 again and confirm that it goes in smoothly. If it does not, loosen the two screws 1, repeat step 2) of the Removal paragraph and restart the setting procedure.
5) Tighten the screws 1.

Note : After installing, be sure to perform tape path adjustment as described in section 4.

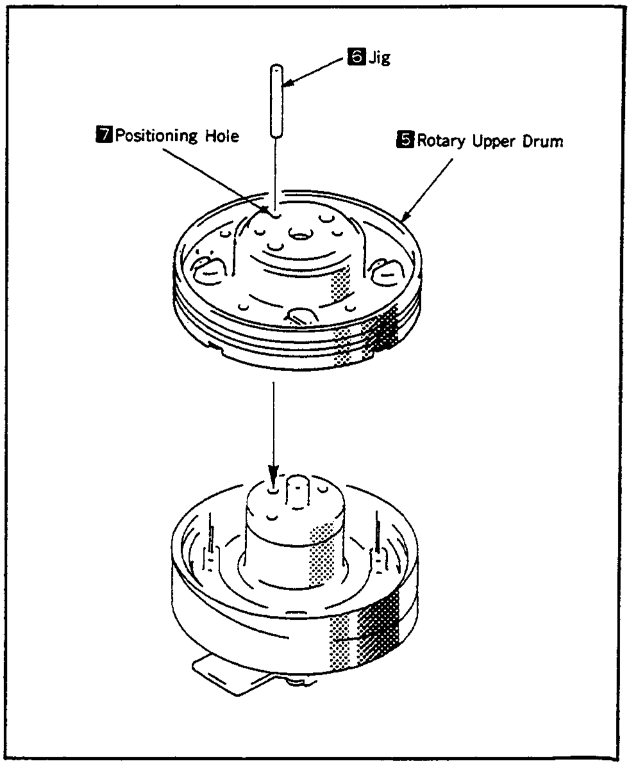


Fig. 31

3-22. ADJUSTMENT OF TENSION REGULATOR POSITION (Fig. 32)

1. Adjustment

1) Set a cassett tape and run the tape in the PB mode.
2) With the tape running, check that the distance from No.1 guide to No. 2 guide upper flange is 4.2 mm.
3) If they are not at the specified positions, perform adjustment in step 4) and subsequent steps.
4) Loosen the screw ■.
5) If No.1 guide is located inside the specified position, shift the string block toward the arrow Ⓐ using the FWD B.T. adjusting driver (Ref No. J-15). Or, if it is located outside, shift toward the arrow Ⓑ.
6) Tighten the screw ■.

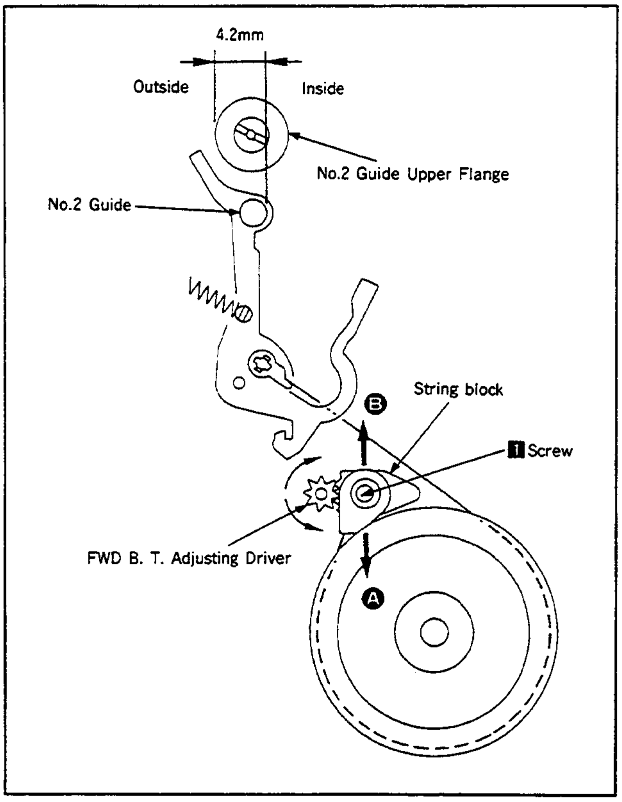

4.2mm
Outside
Inside
No.2 Guide Upper Flange
No.2 Guide
String block
Ⓑ
■ Screw
FWD B. T. Adjusting Driver
Ⓐ

Fig. 32

3-23. FWD BACK TENSION ADJUSTMENT (Fig.33)

1) Select the TEST mode 1 using the adjusting remote controller (Ref No. J-17).
2) Set the torque cassette (Ref No.J-10).
3) Select the FWD mode, and check that the torque of S reel table is 8.5 ~ 11.5 g · cm.
   If it is out of standard, adjust the TG-1 spring hook position using the FWD B.T. adjusting driver (Ref No. J-15).

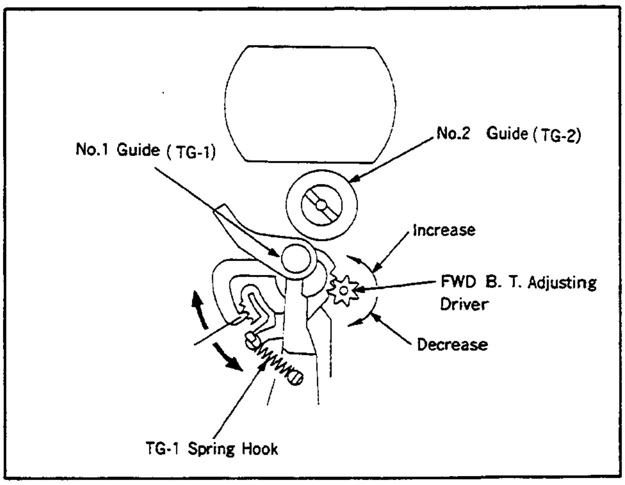

No.1 Guide (TG-1)
No.2 Guide (TG-2)
Increase
FWD B. T. Adjusting Driver
Decrease
TG-1 Spring Hook

Fig. 33

3-24. REEL TORQUE CHECK

1) Set the torque cassette.
2) Select the FWD mode, and check that the torque fluctuation center of T reel table is 7 ~ 17 g · cm
3) Select the REV mode, and check that the torque fluctuation center of S reel table is 25 ~ 39 g · cm.
4) Select the REV mode, and check that the torque of T reel table is 7 ~ 17 g · cm.
5) If the above data is not satisfied, the tension regulator band, T hard tab or T soft assembly will be faulty. Check them first, and if no abnormality is found, replace respective reel tables.

4. TAPE PATH ADJUSTMENT

The 8mm video system uses ATF (Automatic Track Finding) which instantaneously controls a tape running speed based on 4 types of pilot signals and performs high-precision tracking.
This does away a tracking control knob and allows accurate track tracing.
On the other hand, however, the ATF system has a problem in adjusting the tape path system. That is, if head tracing is out of order a little, the ATF automatically corrects it, which means that perfect adjustment cannot be done.
Therefore, in the A mechanism, the ATF system is forcibly operated to shift a tracking amount constantly (approx. 1/4) by setting the PATH mode with the adjusting remote controller (Ref No.J-16). So, fine tracking adjustment can be easily done.
Also, the PATH mode setting varies with the model, and therefore, refer to the Service Manual.

Example) For CCD-FX410 series
Set the adjusting remote controller to the HOLD ON side.

1) Set PAGE : 1, ADDRESS : 00, DATA : 01 to cancel the PROTECT mode.
2) Set PAGE : D, ADDRESS : 01, DATA : 03 to select the PATH mode.

Note : Setting of PATH mode = TRACK SHIFT mode
If the adjusting remote controller (Ref No.J-16) is set to HOLD OFF once, then set to HOLD ON again after mode setting, the display of ADDRESS and DATA changes.

3) After adjustment is over, set DATA : 00, and press the PAUSE buttom on the adjusting remote controller (Ref No. J-16).

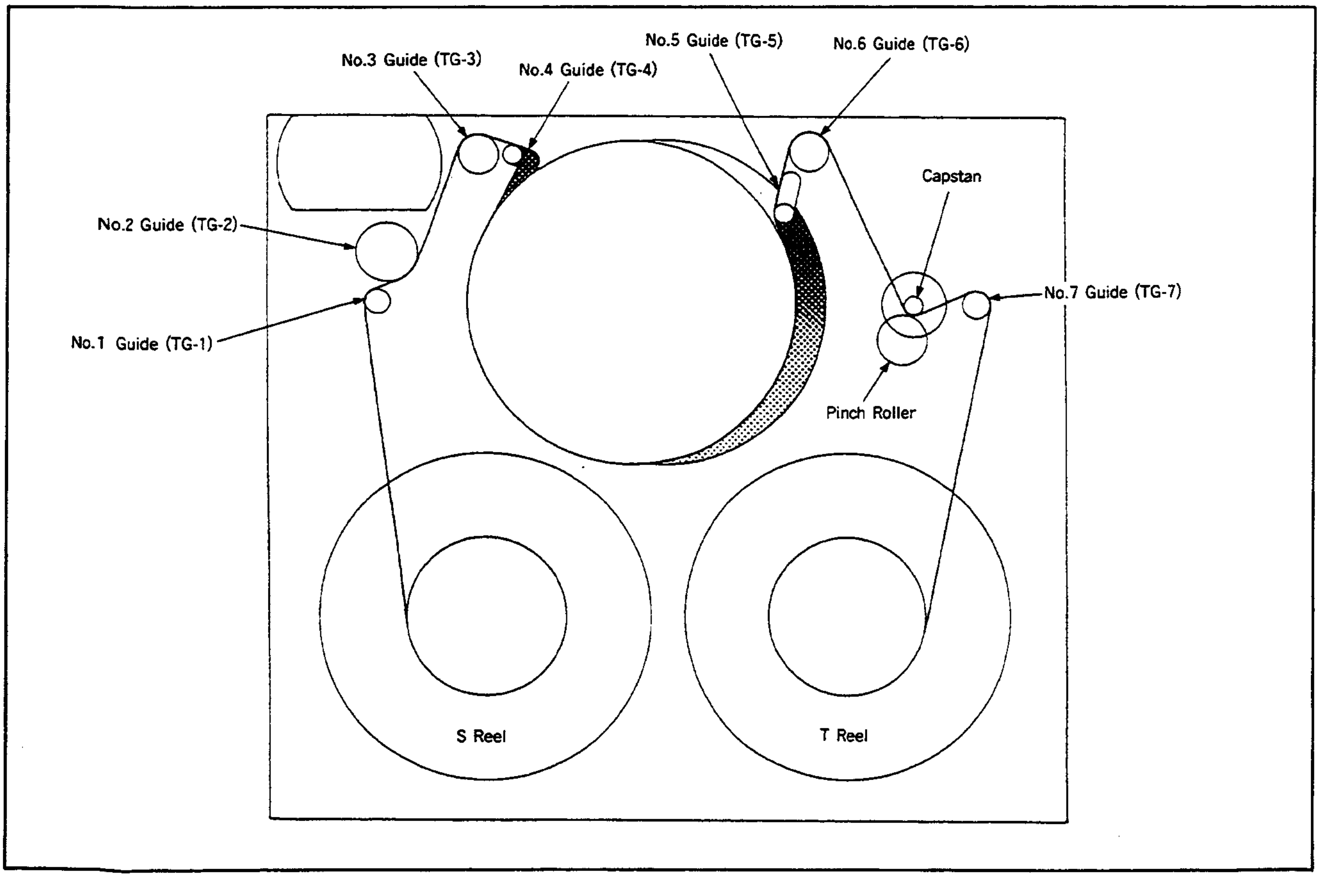


Fig. 34-A

[Note on Adjustment of No.7 Guide (TG-7)]

The height adjustment screw for No.7 guide (TG-7) is located at some distance from the guide (refer to Fig.41).
Therefore, when performing section 4-4. No.7 Guide (TG-7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-6), modified as follows, and perform adjustment in playback mode.

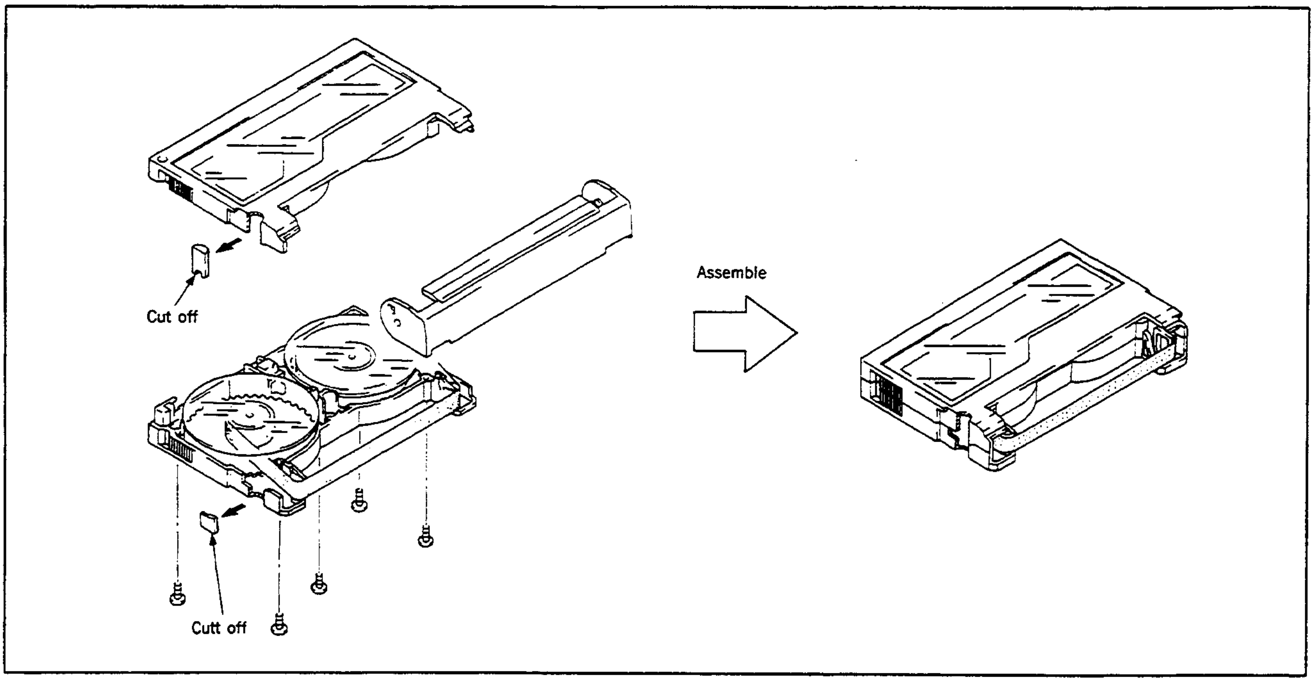


Fig. 34-B

4-1. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surface (tape guides, drum, capstan shaft, pinch roller) (Fig. 34-A).
2) Set the PATH mode using the adjusting remote controller.
3) connect an oscilloscope to the check pin connector of the set.
   Example) For CCD-FX410 series
   CH1 : CN001 pin ③ (PB RF OUT) on CS-31 board
   CH2 : CN001 pin ④ (RF SWP) on CS-31 board
4) Play back a tracking alignment tape (NTSC : WR5-1N, or PAL : WR5-1C).
5) Check that a RF waveform is flat at the inlet and outlet of the oscilloscope (Fig. 35 ⓐ).
   If not flat, make adjustment with the procedures below.
   When the RF waveform is not flat at the inlet/outlet ; See Fig. 35 ⓑ and ⓒ.

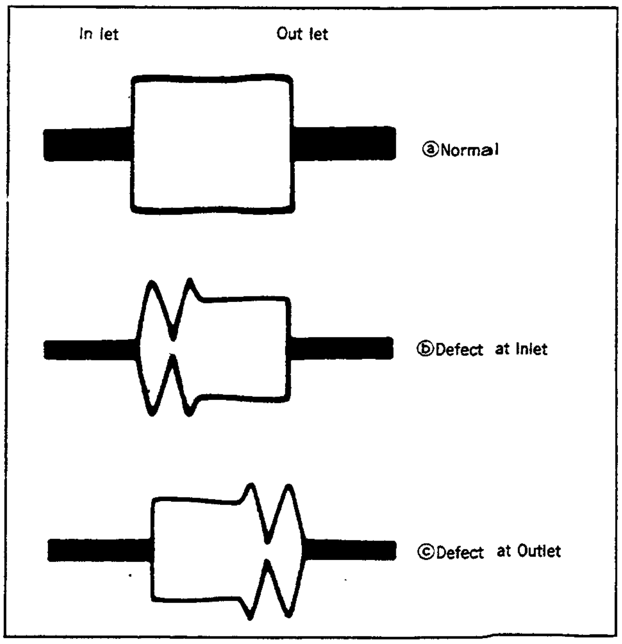


Fig. 35

4-2. TRACKING ADJUSTMENT (Fig. 36, 37)

1) Play back the tracking alignment tape.
2) Loosen the No.3 guide (TG-3) lock screw 1 and turn the No.3 guide to flatten the waveform at the inlet.
3) Tighten the No.3 guide (TG-3) lock screw 1 to lock the No.3 guide.
4) Loosen the No.6 guide (TG-6) lock screw 2 and turn the No.6 guide to flatten the waveform at the outlet.
5) Tighten the No.6 guide (TG-6) lock screw 2 to lock the No.6 guide. When this is done, make sure that the waveform does not change at the outlet.

Note : Be careful not to loosen the lock screw too much because the guide is easily moved.
: Take care not to allow interference between No.6 guide and drum when tightening the No.6 guide lock screw.

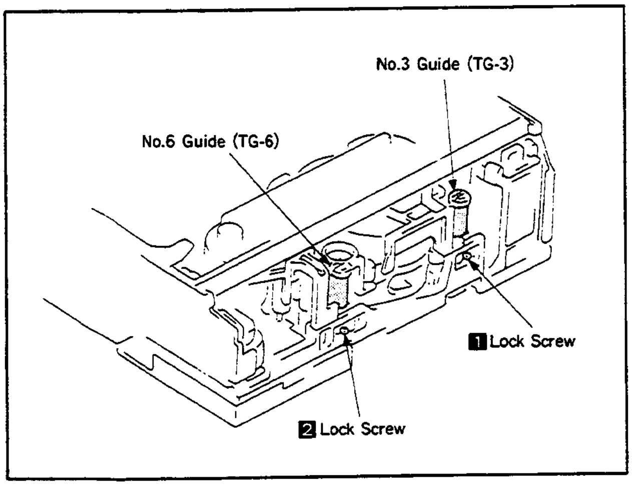


Fig. 36

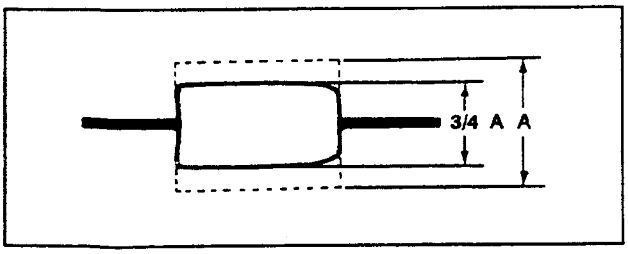


Fig. 37

4-3. No.2 GUIDE (TG-2) ADJUSTMENT

When the No.2 guide has been turned or replaced, perform height presetting before this adjustment.

4-3-1. No. 2 GUIDE (TG-2) HEIGHT PRESETTING (Fig. 38)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3.3 ± 0.05 mm.

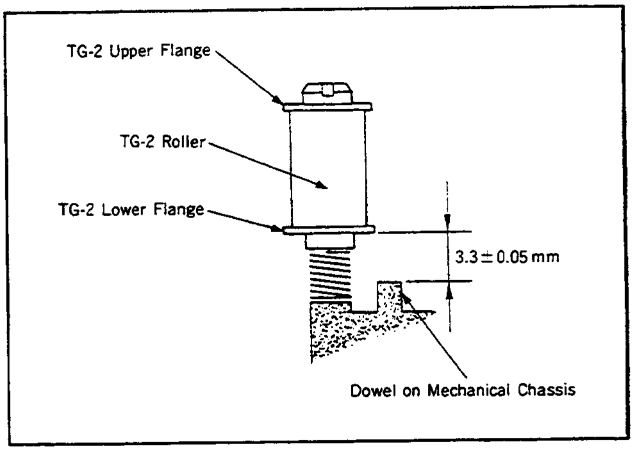


Fig. 38

[Reference]
This A mechanism is equipped with four adjustable guides (TG-2, 3, 6 and 7) . To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.

Guide	Guide adjustment	Rotating direction of adjustment screw
TG-2, 3, 6	Raise	Counterclockwise
	Lower	Clockwise
TG-7	Raise	Clockwise
	Lower	Counterclockwise

4-3-2. No. 2 GUIDE (TG-2) ADJUSTMENT (Fig. 39, 40)

1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
2) Confirm that the tape is not bent at the lower flange ❷ of the No.2 guide (TG-2) ❶ (Fig. 39). If it is, turn the upper flange ❸ of the No.2 guide (TG-2) clockwise with a screwdriver, lowering it until the tape is straightened.
3) Play back the alignment tape for tracking adjustment.
4) Perform tracking adjustment and trcking fine adjustment as described in sections 4-2.
5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
6) If the waveform is not normal (Fig. 40), turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ 90° counterclockwise and repeat step 5.
   Repeat steps 5) and 6) until a normal waveform is obtained.
   Then, confirm that the tracking waveform has not changed.
   If it has, perform fine adjustment of entrance side tracking and repeat step 5).

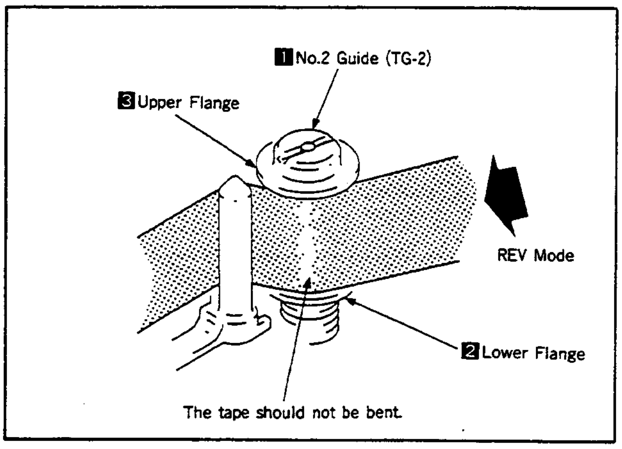


Fig. 39

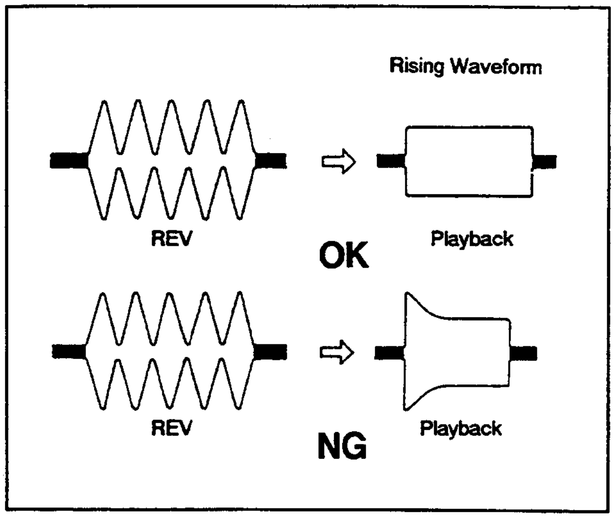


Fig. 40

4-4. No.7 GUIDE (TG-7) ADJUSTMENT (Fig. 41)

Note : This adjustment requires the No. 7 guide adjusting cassetetape (Fig. 34-B).

1) Play back the No.7 guide adjusting cassetetape and set the REV mode.
2) Confirm that the tape is not bent between the No.6 guide (TG-6) ❶ and the capstan ❷. If it is, turn the hight adjusting screw ❹ of the No.7 guide (TG-7) ❸ until the tape is straightened.
3) Set the playback mode again and confirm that the tape is not bent between the capstan ❷ and the hight adjusting screw ❹ of the No.7 guide (specification : 0.5mm or less). If the tape is bent beyond the specification, turn the No.7 guide (TG-7) ❸ until bending is within the specification (0.5mm).
   If in the REV mode tape bending between the No. 6 guide (TG-6) ❶ and the capstan ❷ is 0.3mm or less, adjustment can be considered completed.

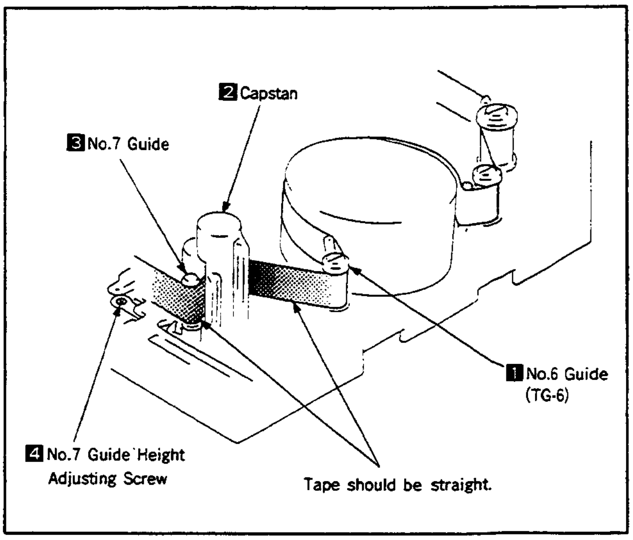


Fig. 41

4-5. CUE AND REV WAVEFORM CHECK (Fig. 42)

1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (Fig. 42). In case pitch is not constant, perform section 4-2.Tracking Fine Adjustment and section 4-4. No.7 Guide Adjustment.
2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (Fig. 4-2).
   Otherwise, perform section 4-2 Tracking Fine Adjustment.

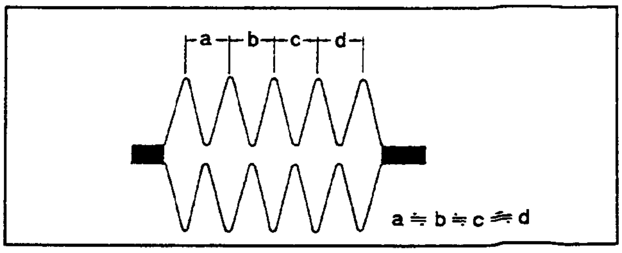


Fig. 42

4-6. CHECK AFTER ADJUSTMENT

4-6-1. TRACKING CHECK

1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (Fig. 43).
2) Then, confirm that the minimum amplitude value (EMIN) is 65 % of the maximum value (EMAX) or larger (Fig. 44).
3) Confirm that no large fluctuations occur on the waveform (Fig. 45).

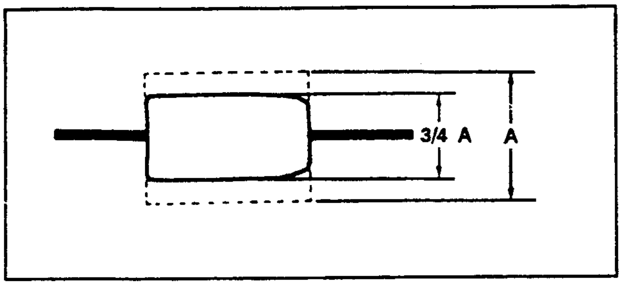


Fig. 43

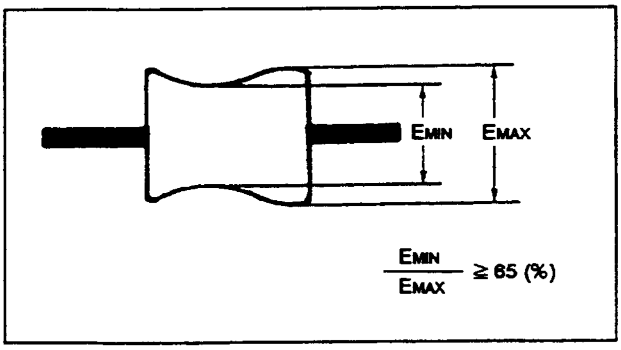

EMIN
EMAX
EMIN / EMAX ≧ 65 (%)

Fig. 44

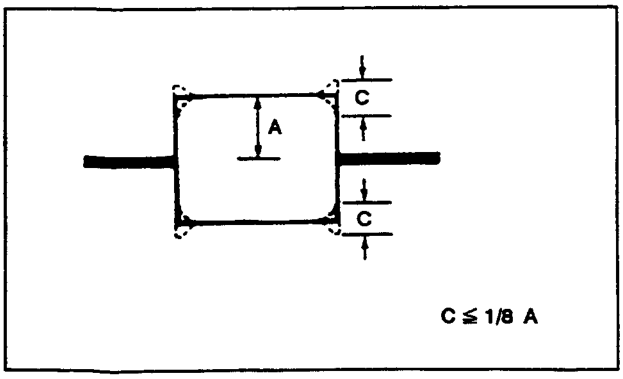


Fig. 45

4-6-2. RISING CHECK (Fig. 46)

1) Play back the alignment tape for tracking adjustment.
2) Cancel the track shift mode.
3) Eject the tape, then load it again.
4) Set the playback mode and confirm that the RF wave form rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds, Also confirm that the tape is not bent around the pinch roller.
6) Repeat steps 3) to 5) once more.

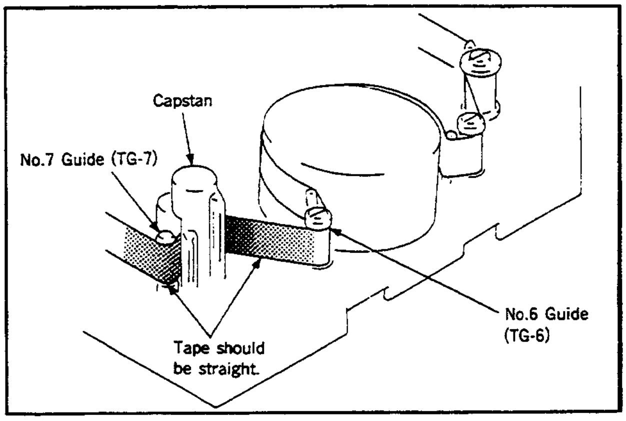

Capstan
No.7 Guide (TG-7)
Tape should be straight.
No.6 Guide (TG-6)

Fig. 46

4-6-3. TAPE PATH CHECK (Fig. 47)

1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3mm, at the lower flange of the No. 2 guide , the upper flange of the No.3 guide, the upper flange of the No. 6 guide and the No.7 guide upper and lower flanges.
2) Confirm that no tape rising occurs and that curling is less than 0.3mm at the flange of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REW button to set the REV mode.

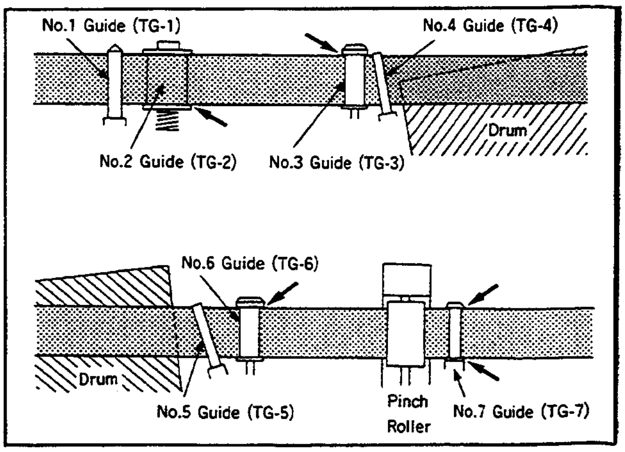

No.1 Guide (TG-1)
No.4 Guide (TG-4)
Drum
No.2 Guide (TG-2)
No.3 Guide (TG-3)
No.6 Guide (TG-6)
Drum
No.5 Guide (TG-5)
Pinch Roller
No.7 Guide (TG-7)

Fig. 47

8mm Video MECHANICAL ADJUSTMENT MANUAL IV

A MECHANISM

SUPPLIMENT-2

Video 8

〈Connection of Mode Selector IV Conversion Connector〉

In use of Mode selector IV conversion connector(J-6082-167-A), there are two different connecting methods depending on the model connected:

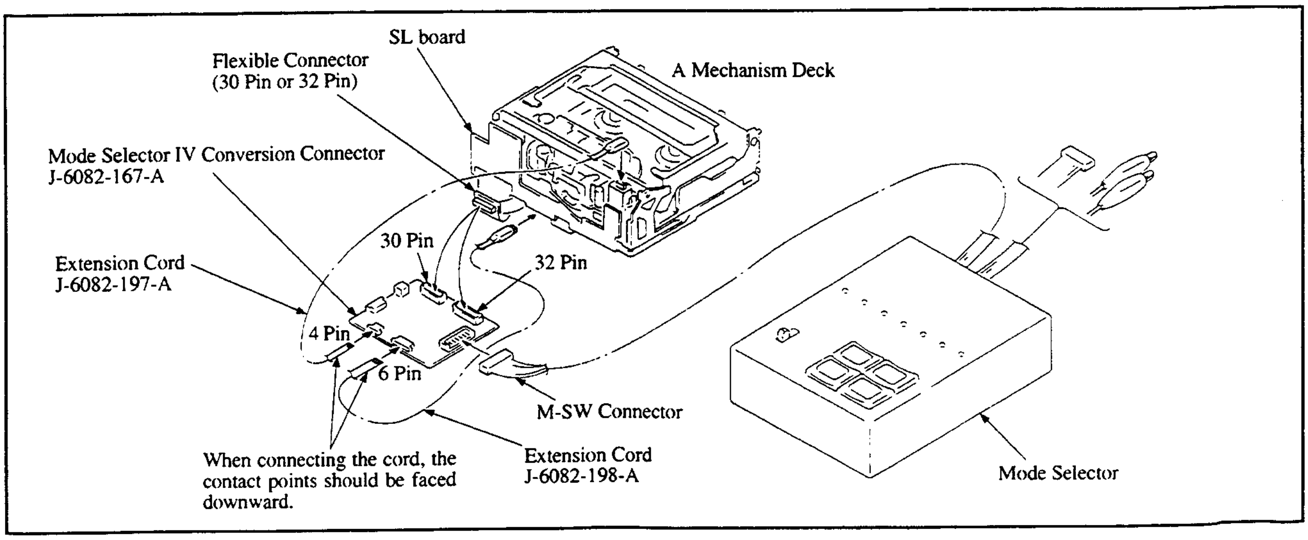
1. CCD-FX series

With the SL board mounted on mechanical deck, connect 30-pin(or 32-pin) connector to 30-pin(or 32-pin) Mode selector IV conversion connector.

CCD-FX300 series, FX400 series. FX500 series
→ 30-pin connector (FP425 or FP600)
CCD-FX700 series → 32-pin connector (FP477)

2. Models other than above

Connect the extension cord(J-6082-197-A) to loading motor 4-pin connector and extension cord (J-6082-198-A) to mode switch 6-pin connector in mechanical deck, then connect the other end of cord to 4-pin and 6-pin connectors of Mode selector IV conversion connector respectively, as shown below.


SL board
Flexible Connector
(30 Pin or 32 Pin)
A Mechanism Deck
Mode Selector IV Conversion Connector
J-6082-167-A
30 Pin
Extension Cord
J-6082-197-A
32 Pin
4 Pin
6 Pin
M-SW Connector
Extension Cord
J-6082-198-A
Mode Selector

When connecting the cord, the contact points should be faced downward.

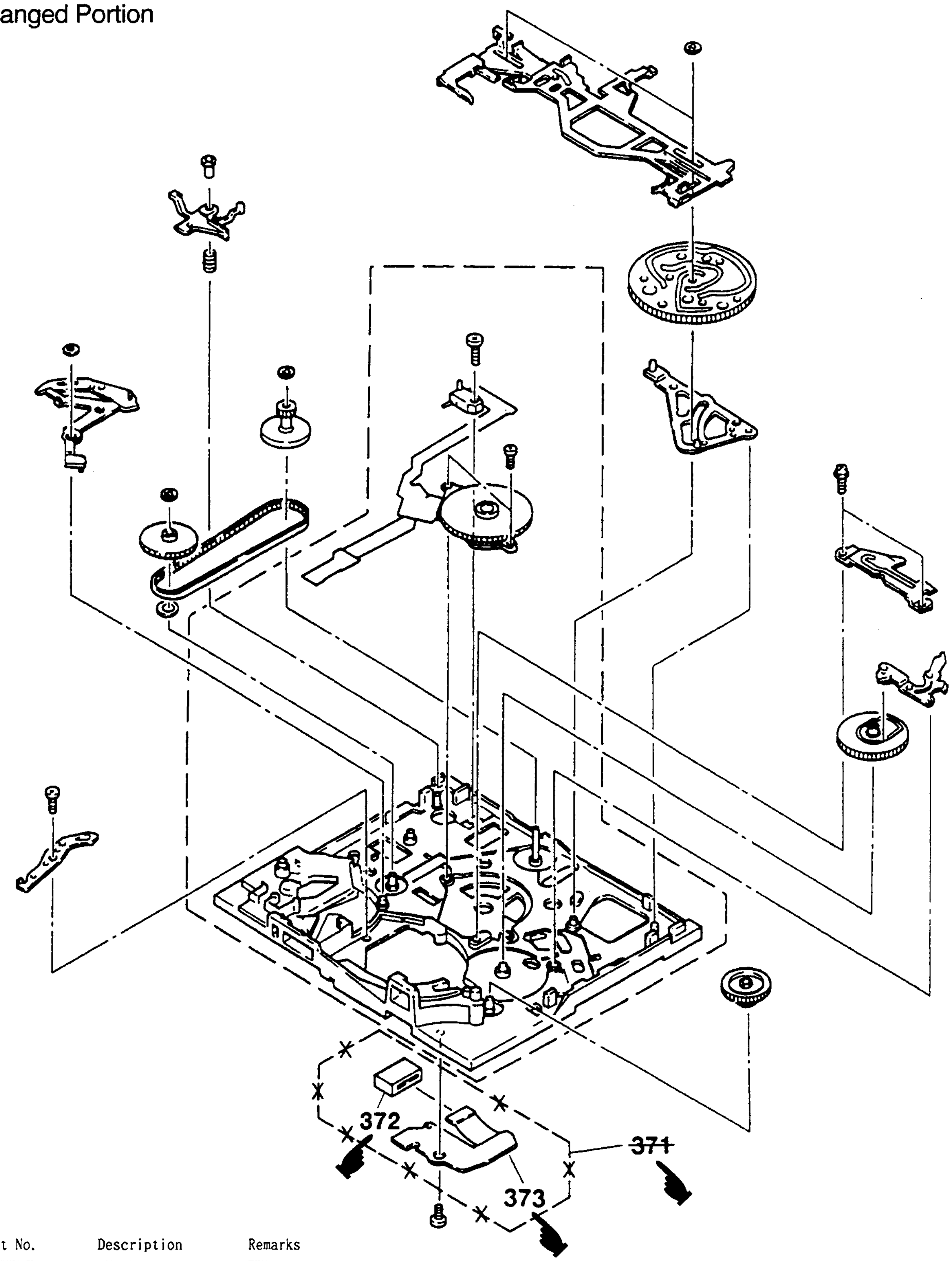
〈CORRECTION〉

P10. 2-4 Service jigs list

		Incorrect		Correct
J-15	FWD B.T adjusting driver	J-6082-182-A	➔	J-6082-187-A

MECHANISM CHASSIS ASSEMBLY (2)

☛ : Changed Portion



Ref.No.	Part No.	Description	Remarks
~~371~~	~~A-7040-311-A~~	~~FP-444 ASSY~~	☛
372	1-691-254-13	CONNECTOR, TRANSLATION 10P	☛
373	1-641-639-13	FP-442 FLEXIBLE BOARD	☛

English
93E18163-1
Printed in Japan
©1993.5
Published by CV Quality Engineering DIV.

Sony Corporation
Personal Video Group

8mm Video MECHANICAL ADJUSTMENT MANUAL IV

English
92C18143-1
Printed in Japan

©1992. 3

Published by Customer Relations and Service Group

Sony Corporation
Personal Video Group

9-973-199-11

GRUNDIG SERVICE MANUAL

Ⓓ Btx * 32700 #

Service Manual
LC 435 E
Sach-Nr./Part No.
72010-516.45

Zusätzlich erforderliche Unterlagen für den Komplettservice:

Additionally required Service Manuals for the Complete Service:

Service Manual	Service Manual	Service Manual	Service Manual
Sicherheit Safety	A-Mechanik	NA 8-3	NA-L1
Sach-Nr./Part No. 72010-800.00	Sach-Nr./Part No. 72010-512.16	Sach-Nr./Part No. 72010-512.65	Sach-Nr./Part No. 72010-517.55

LC 435 E

V16002

x10
zoom
GRUNDIG
LC 435 E
LIVE CAM
CAMERA

LC 435 E (75.8600-1000 / G.MD 6100)

VIDEO
8

Änderungen vorbehalten
Subject to alteration

Printed in Germany/Japan
VK 222 0794

Service Manual Sach-Nr. 72010-516.45
Service Manual Part No. 72010-516.45

Es gelten die Vorschriften und Sicherheitshinweise gemäß dem Service Manual "Sicherheit", Sach-Nummer 72010-800.00, sowie zusätzlich die eventuell abweichenden, landesspezifischen Vorschriften!

The regulations and safety instructions shall be valid as provided by the "Safety" Service Manual, part number 72010-800.00, as well as the respective national deviations.

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Service Manual (CCD-TR350E)

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Service Manual (CCD-TR350E)

Allgemeiner Teil

Meßgeräte

Zweikanaloszilloskop
Digitalmultimeter
Tongenerator
Frequenzzähler
Vektorskop
Regeltrenntrafo
Millivoltmeter
Stabilisiertes Netzgerät
Farbgenerator

Beachten Sie bitte unser Meßtechnik-Programm, das Sie unter folgender Adresse erhalten:

Grundig electronics GmbH
Würzburger Str.150
D-90766 Fürth/Bay.
Tel. 0911/7330-0
Telefax 0911/7330-479

General

Test Equipment

Dual channel oscilloscope
Digital multimeter
AF generator
Frequency counter
Vectorscope
Variable isolating transformer
Millivoltmeter
Stabilized power supply
Colour generator

Please note our Catalog "Test and Measuring Equipment" obtainable from:

Grundig electronics GmbH
Würzburger Str.150
D-90766 Fürth/Bay.
Tel. 0911/7330-0
Telefax 0911/7330-479

Sicherheitsausgangsprüfung

Nachdem Sie die Reparatur beendet haben, überprüfen Sie folgende Punkte, bevor Sie das Gerät an den Kunden zurückgeben:

1. Überprüfen Sie den Bereich Ihrer Reparatur auf fehlende oder schlechte Lötstellen. Kontrollieren Sie die ganze Platinenoberfläche auf Zinnspritzer und Kurzschlüsse.
2. Überprüfen Sie die Platinenverbindungen, und stellen Sie sicher, daß keine Leitungen eingequetscht werden oder Hochlast-Widerstände berühren.
3. Achten Sie auf unerlaubte Ersatzteile, insbesondere Transistoren, die bei früheren Reparaturen eingebaut wurden. Weisen Sie den Kunden darauf hin und empfehlen Sie den Austausch.
4. Achten Sie auf Teile, die zwar noch funktionieren, aber offensichtliche Abnutzungserscheinungen zeigen. Weisen Sie den Kunden darauf hin und empfehlen Sie den Austausch.

Technische Daten

Camera
Aufnahmelement: $^{1}/_{3}$" CCD Halbleiter-Chip
Auflösung: 320 000 Bildpunkte
Mindestbeleuchtung: 2 Lux (Low Light),
Zoombereich: 10-fach Motor-Zoom
Brennweite: 6,2...62mm
Lichtstärke (Optik): 1 : 1,6...2,9
Auto-Fokus-System: TTL-Autofokus, Innenfokussierung mit Makro-System
Filtergewindedurchmesser: 37mm

Video
Aufnahmesystem: 2 rotierende Köpfe, Schrägspurverfahren, PAL
1 rotierender Löschkopf
Bandformat: 8mm-Videoformat-Cassette
Bandgeschwindigkeit: 20,051mm/s

Audio
Aufzeichnungsverfahren: 2 rotierende Köpfe, Schrägspurverfahren FM
Mikrofon: Elektret-Kondensator-Mikrofon

Anschlußmöglichkeiten
Videoausgangsbuchse: Cinchbuchse, $1V_{SS}$, 75Ω, unsymmetrisch, Sync. negativ
Audioausgangsbuchsen: Cinchbuchse, -7,5dBs (bei Lastimpedanz von 47kΩ) Impedanz <2,2kΩ
Edit-Buchse: Stereoklinkenbuchse 2,5mm
Mikrofonbuchse: KLlinkenbuchse 3,5mm, mit 2,5...3V Ausgangsspannung, -66dBs, Impedanz 6,8kΩ

Betriebsspannung
Akkubetrieb: 6,0V
Netzteilbetrieb: 7,5V

Leistungsaufnahme
Aufnahmebetrieb (mit Monitor): ca. 5,3W

Allgemeines
Gewicht: ca. 760g (ohne Akkusatz)
Sucher: $^{2}/_{3}$" Suchermonitor (schwarz/weiß)
Arbeitstemperatur: 0°C ... 40°C

Safety Check-out

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particulary transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.

Technical Data

Camera
Image device: $^{1}/_{3}$" CCD Charge Coupled Device
Definition: 320 000 Pixel
Minimum illumination: 2 Lux (Low Light),
Zoom range: 10 fold motor zoom
Focus length: 6,2...62mm
Luminous intensity (Optic): 1 : 1.6...2.9
Auto focus system: TTL autofocus system, inner focus wide macro system
Filter thread diameter: 37mm

Video
Video recording system: 2 Rotating heads, Helical scanning FM system, PAL
1 Rotating erase head
Tape format: 8mm videoformat cassette
Tape speed: 20,051mm/s

Audio
Audio recording system: 2 Rotating heads, Helical scanning FM system
Microphone: Electret condenser microphone

Connections
Video output socket: Cinch jack, $1 V_{pp}$, 75Ω, unbalanced, sync negative
Audio output sockets: Cinch jack, -7.5dBs (at load impedance 47kΩ) impedance <2.2kΩ
Edit socket: Stereo mini-minijack (2.5mm)
MIC jack: Minijack (3.5mm), with 2.5...3V DC output, -66dBs, impedance 6.8kΩ

Power requirements
Battery pack: 6.0V
AC power adaptor: 7.5V

Power consumption
Camera recording (with viewfinder): approx. 5.3W

General
Weight: approx. 760g (without battery pack)
Viewfinder: $^{2}/_{3}$" Viewfinder (black/white)
Operating temperature: 0°C ... 40°C

LC 435 E Servicemittel / Service Jigs and Tools

Stück Piece	Bezeichnung Description	Sach-Nr. Part No.	Sony-Nr. Sony No.
2	ND-Filter / ND Filter (1.0)	75987-532.04	J-6080-808-A
1	Testband / Alignment Tape WR 5-6 C	75987-526.56	8-967-995-17
1	Testband / Alignment Tape WR 5-5 CSP oder Testband / or Alignment Tape WR 5-4 CSP	75987-526.57 75987-561.64	8-967-995-47 8-967-995-46
1	Testband / Alignment Tape WR 5-5 CL	75987-526.58	8-967-995-56
1	Testband / Alignment Tape WR 5-1 CP	75987-561.62	8-967-995-07
1	Farbtestbild für Lichtbox / Colour Chart for Pattern Box	–	J-6020-250-A
1	Lichtbox / Pattern box PTB-500	–	J-6029-140-A
1	Filter (C14)	75987-532.01	J-6080-054-A
1	ND-Filter / ND Filter (0.4)	75987-532.02	J-6080-806-A
1	ND-Filter / ND Filter (0.1)	75987-532.03	J-6080-807-A
1	ND-Filter / ND Filter (0.3)	75987-536.44	J-6080-818-A
1	Bedieneinheit für Einstellarbeiten / Adjustment Remote Control (RM 95B)	75987-561.68	J-6082-053-B
1	Messadapter für das Kamerateil / Measuring Pin for Camera Section	75981-274.06	J-6082-139-A
1	Verlängerungskabel / Extension Cable (20P) 0,5mm	75981-274.03	J-6082-138-A
1	Verlängerungskabel / Extension Cable (30P) 0,8mm	75981-282.01	J-6082-167-A
1	Verlängerungskabel / Extension Cable (21P) 0,5mm	75981-284.03	J-6082-176-A
1	Verlängerungskabel / Extension Cable (42P) 0,8mm	75981-290.06	J-6082-195-A
1	Verlängerungskabel / Extension Cable (20P) 0,8mm	75981-290.07	J-6082-196-A
1	Verlängerungskabel / Extension Cable (10P) 1,0mm	75987-536.51	J-6082-064-A
1	GRUNDIG-Testbildsatz / GRUNDIG-Set of Test Charts	75987-358.56	–
1	Schwarz-weiß Testbild / Black-white Test Pattern (1189mm x 841mm)	–	–

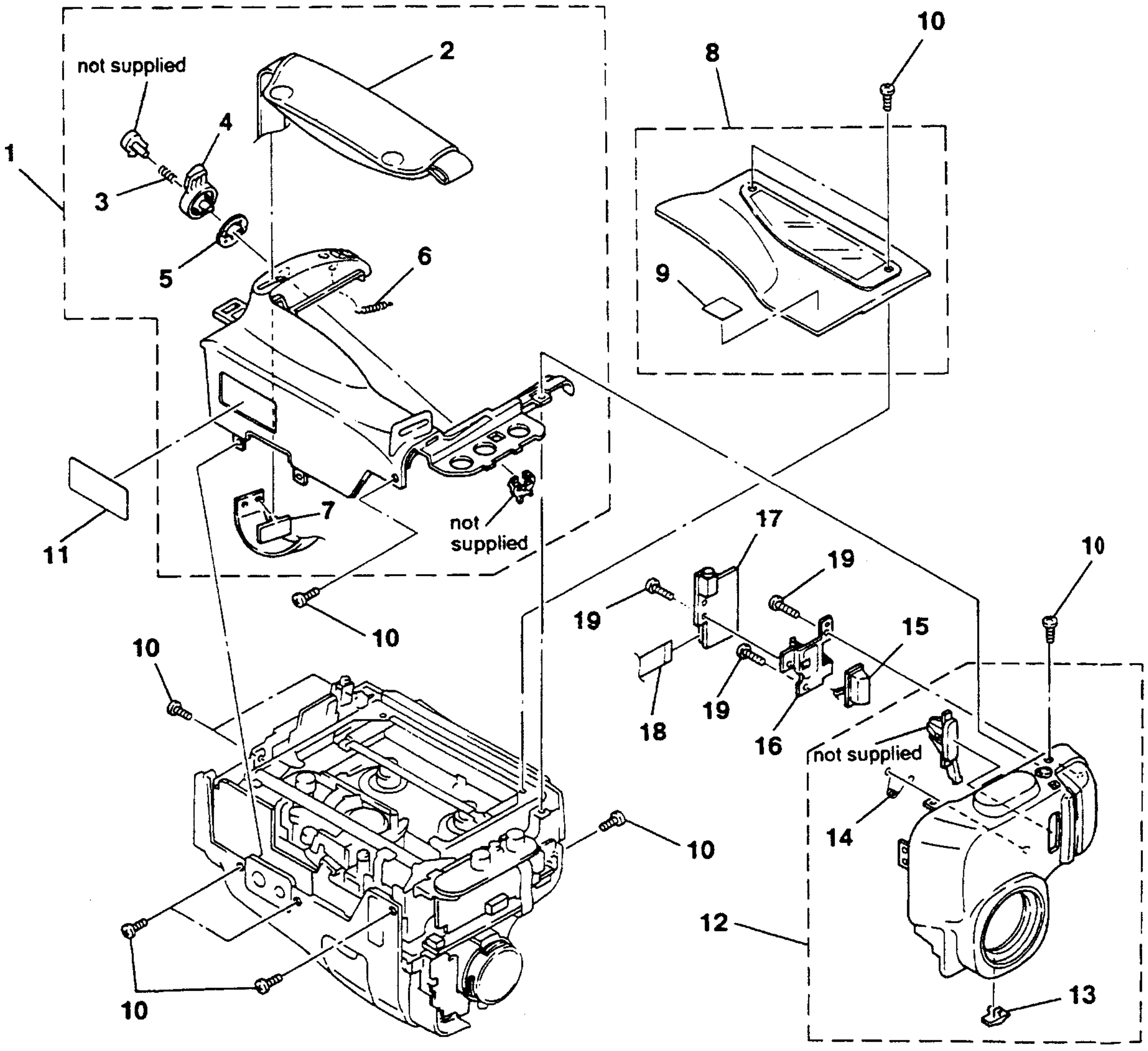
Die Servicemittel für die Mechanik des Camcorders LC 435 E sind im Service Manual (Sach-Nr. 72010-512.16) A-Mechanik aufgelistet.

The Service Jigs and Tools for the mechanic of the camcorder LC 435 E are listed in the Service Manual (Part No. 72010-512.16) for the A-Mechanic.

Explosionszeichnungen / Exploded Views

Linkes und vorderes Gehäuseteil / Cabinet (L) and Front Panel Assemblies

1


1
2
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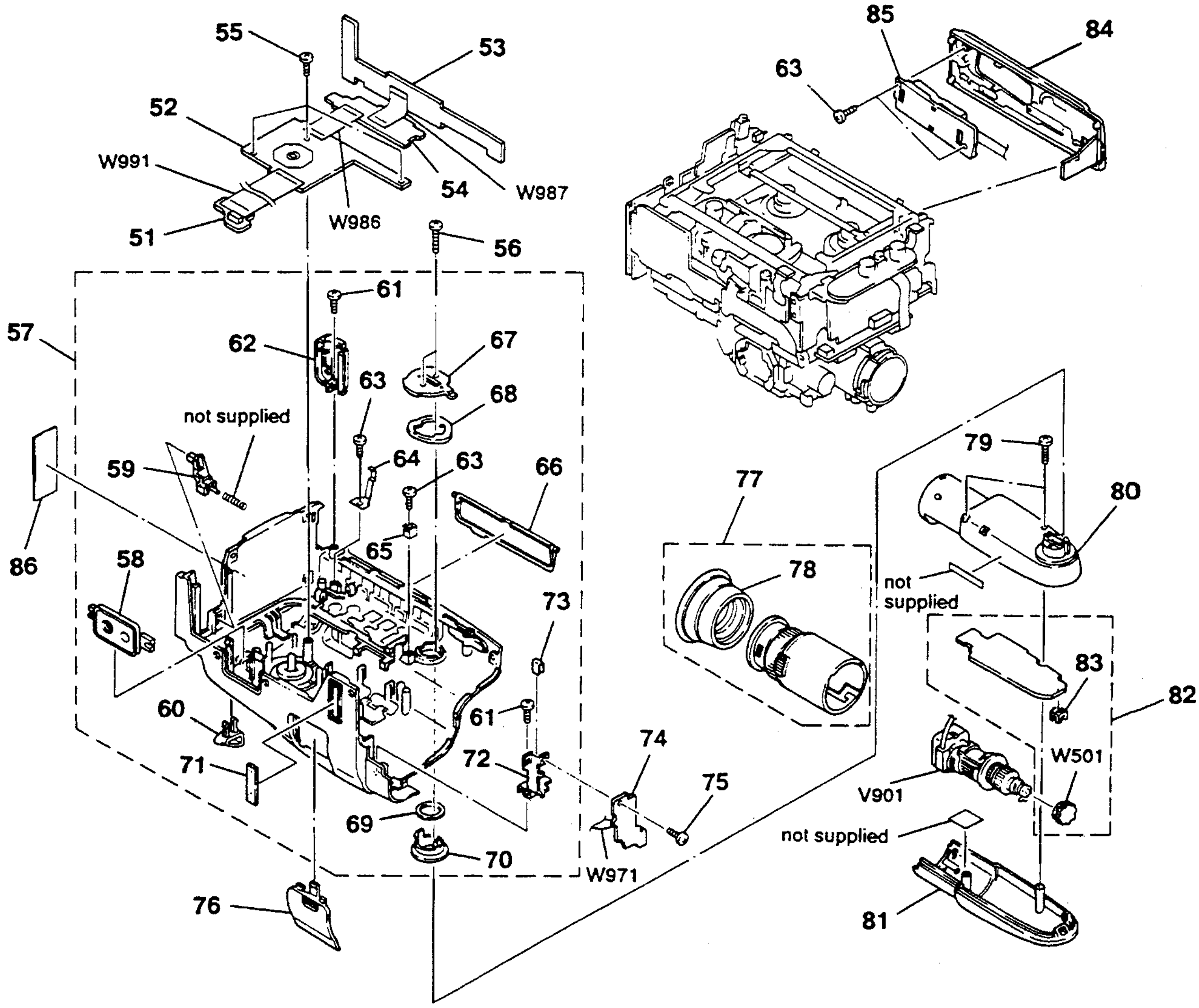
16
17
18
19
not supplied

Rechtes Gehäuseteil und Sucher (Monitor) / Cabinet (R) and EVF Assemblies

2


55
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W991
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W987
W986
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W971
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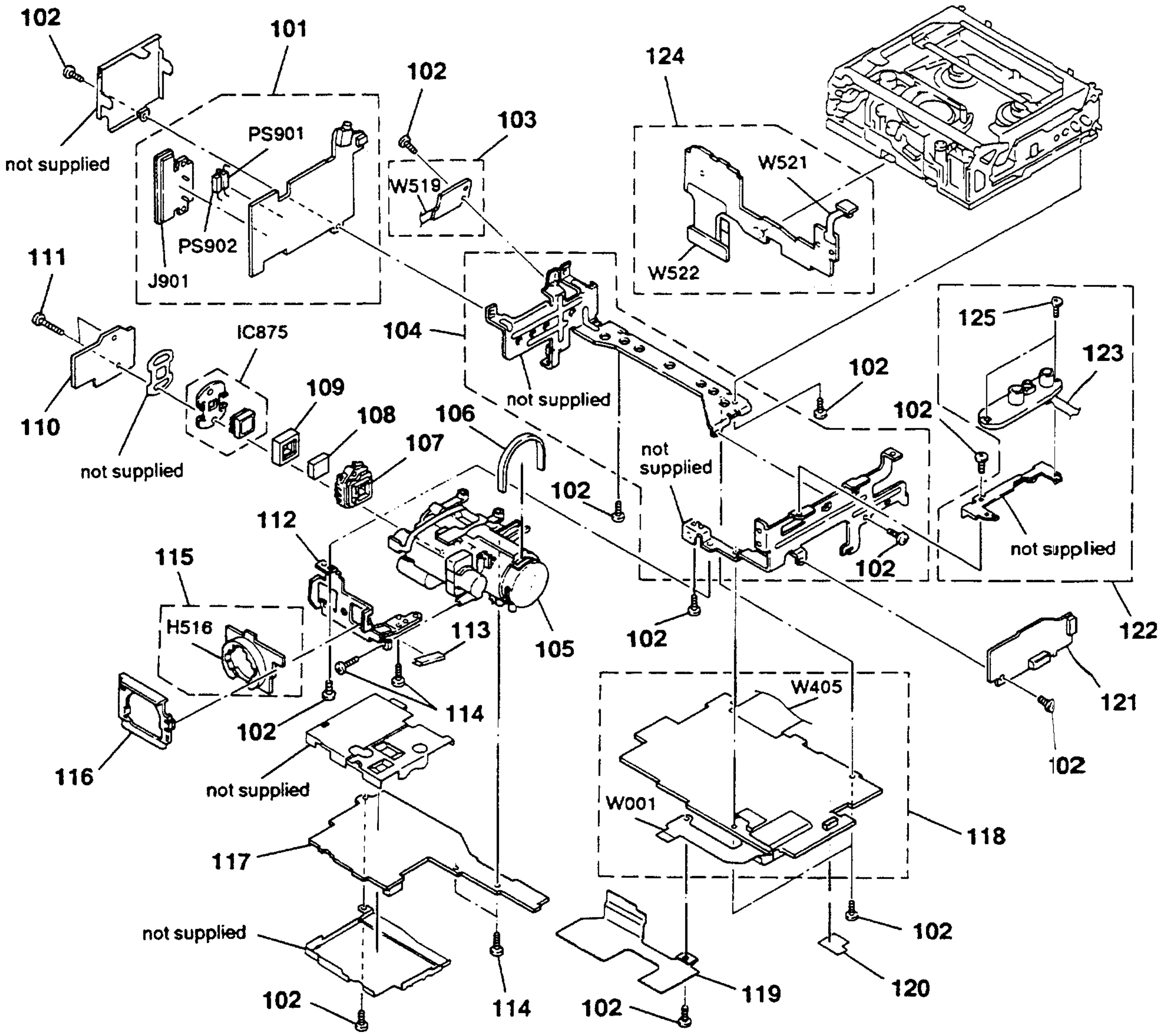
not supplied
83
82
W501
V901
not supplied
81

Hauptplatinen / Main Boards Assembly

3


102
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124
not supplied
PS901
W519
W521
PS902
W522
111
J901
IC875
104
125
123
109
not supplied
102
110
108
106
102
not supplied
107
not
supplied
102
not supplied
112
115
102
not supplied
H516
113
105
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122
114
W405
121
102
116
102
not supplied
118
W001
117
not supplied
102
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120
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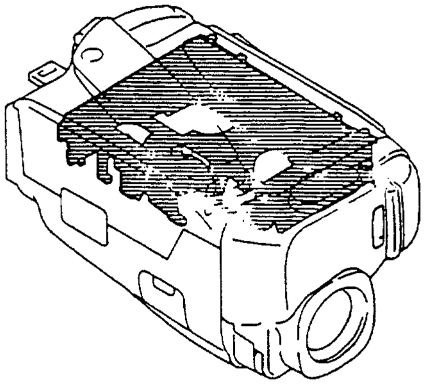
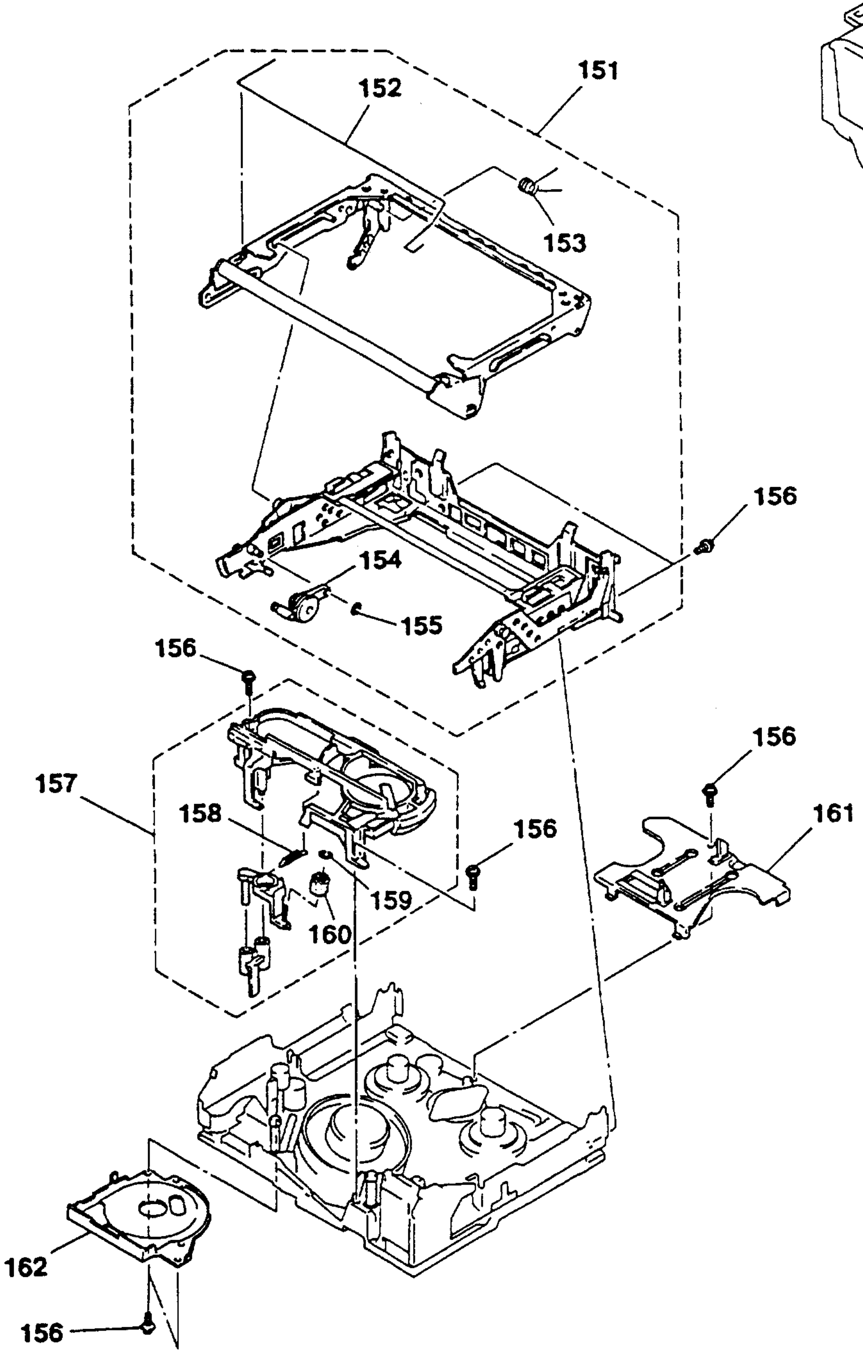
102

Cassettenschacht / Cassette Compartment Assembly

4

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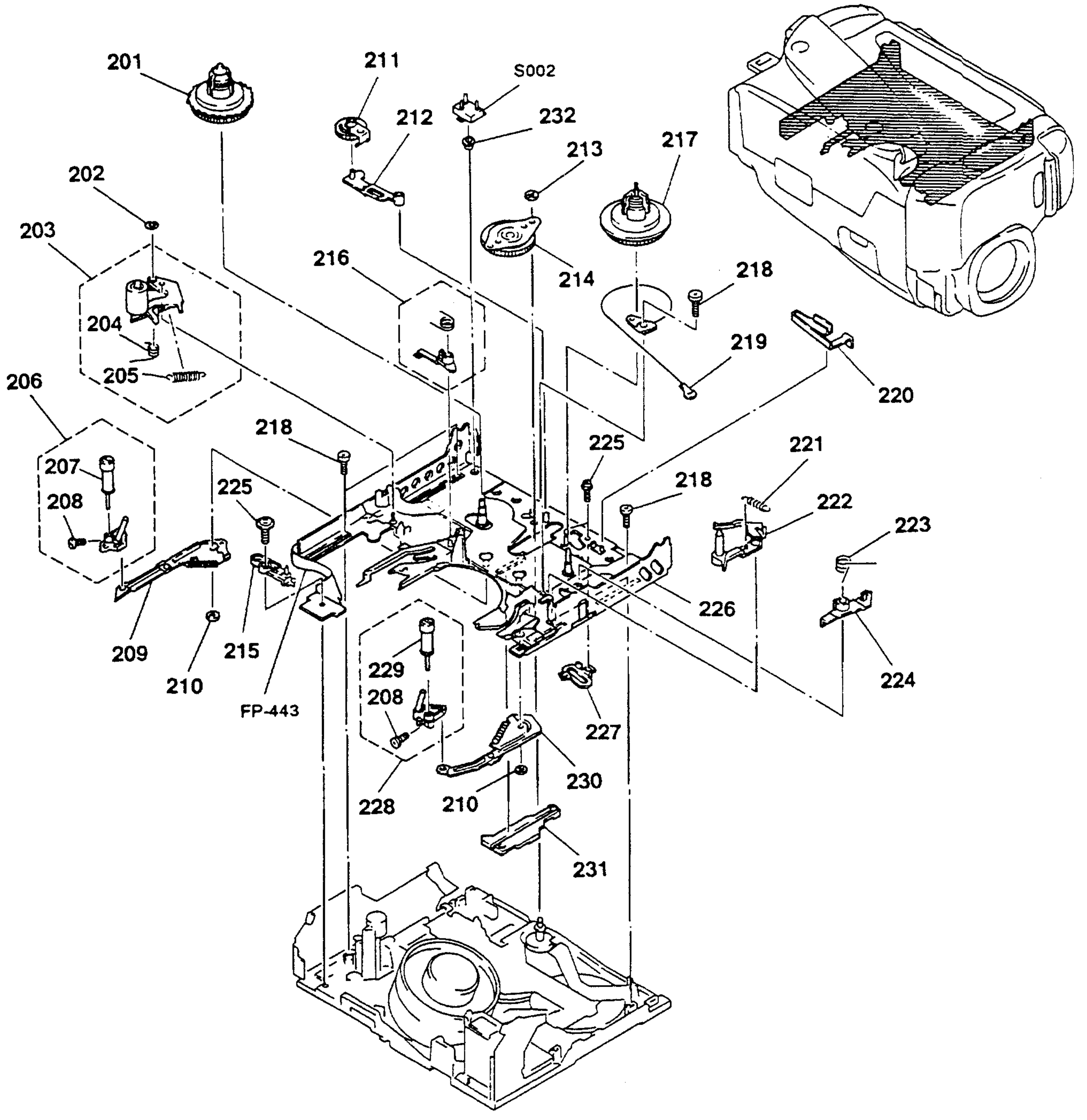
Chassis / LS Chassis Assembly

5


201
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FP-443
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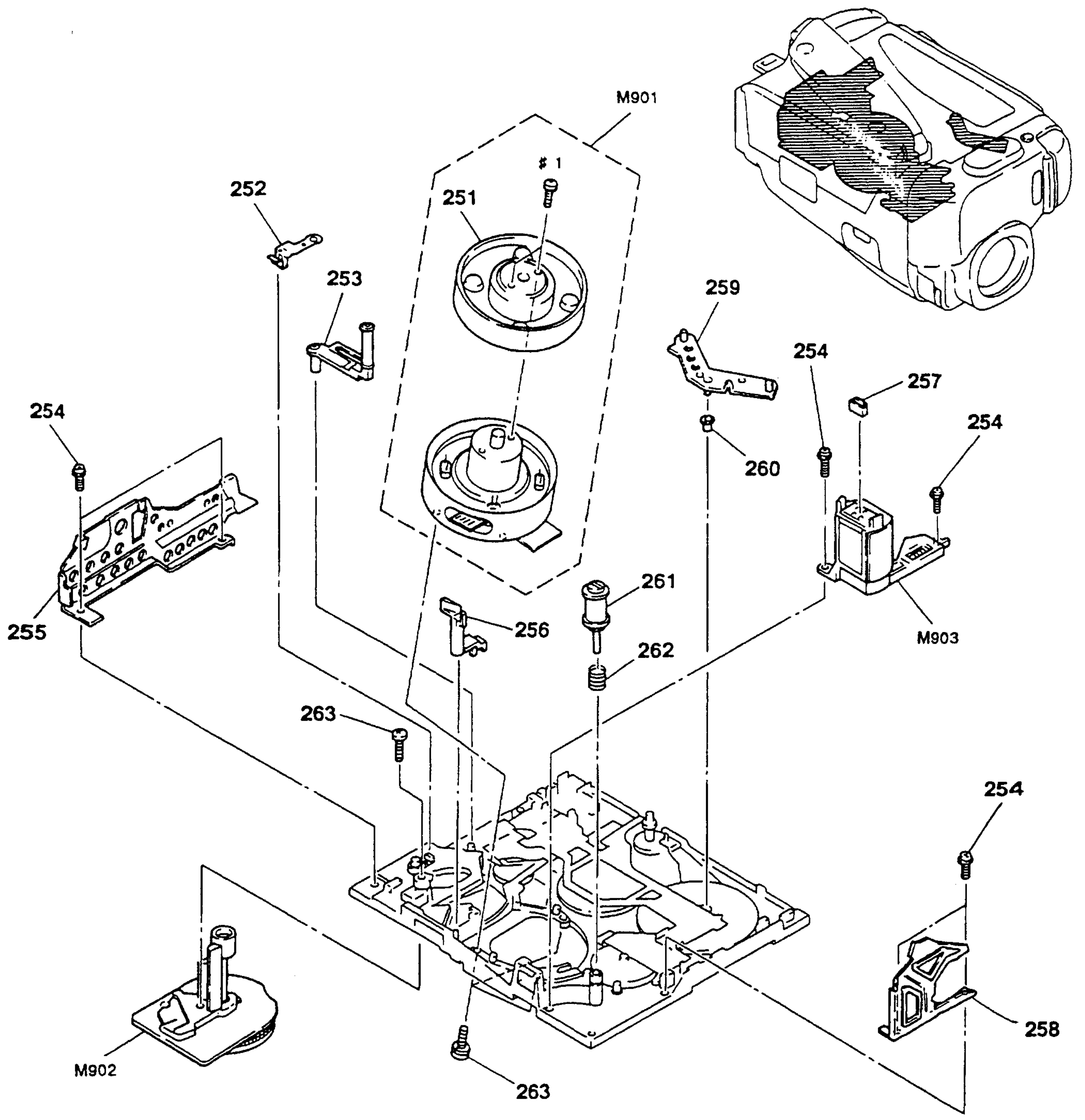
231

Laufwerk (1) / Mechanism Chassis Assembly (1)

6


M901
# 1
252
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M903
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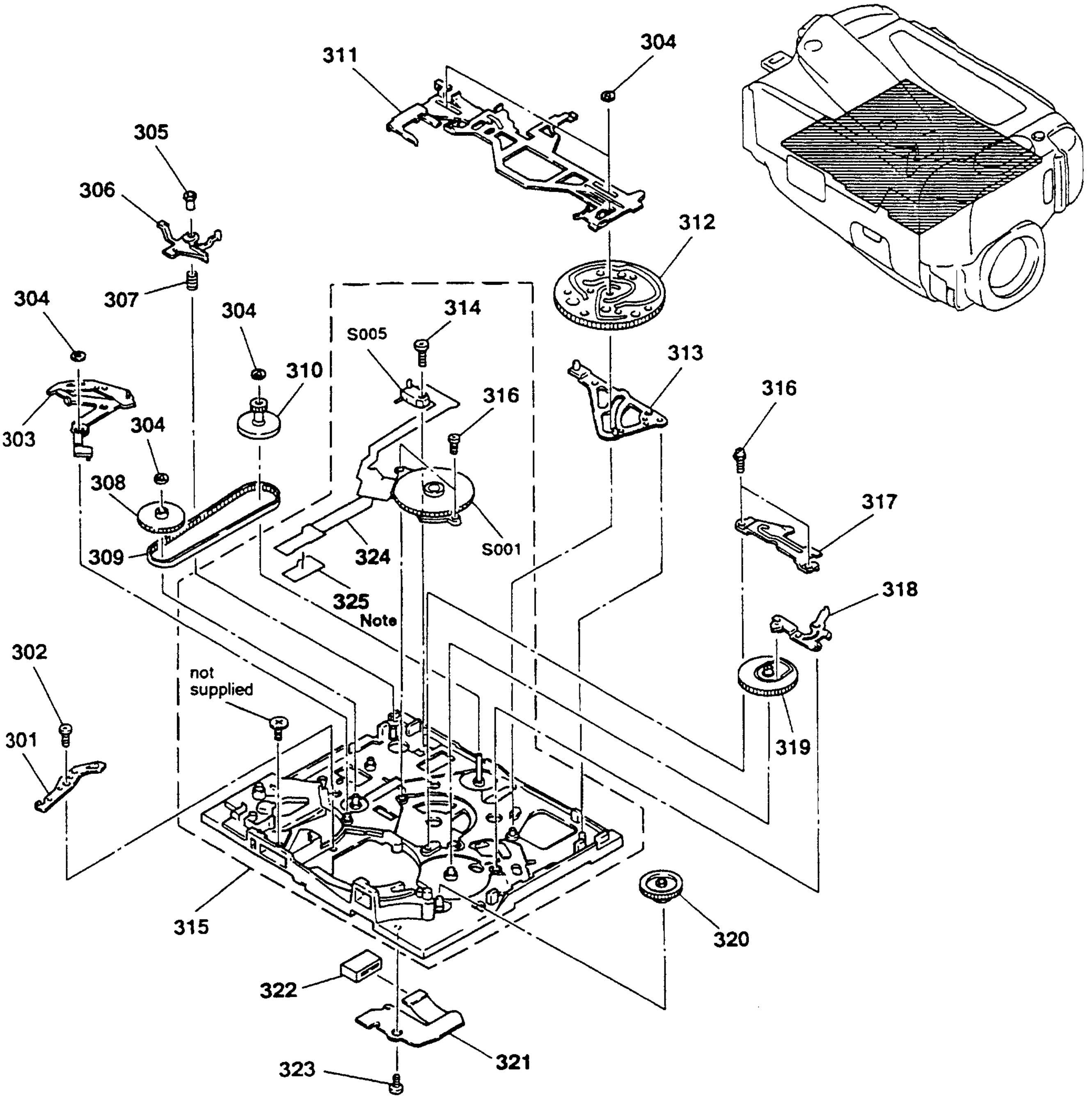
258
M902
263

Laufwerk (2) / Mechanism Chassis Assembly (2)

7


311
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S005
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303
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309
324
S001
325
Note
318
302
not supplied
301
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315
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322
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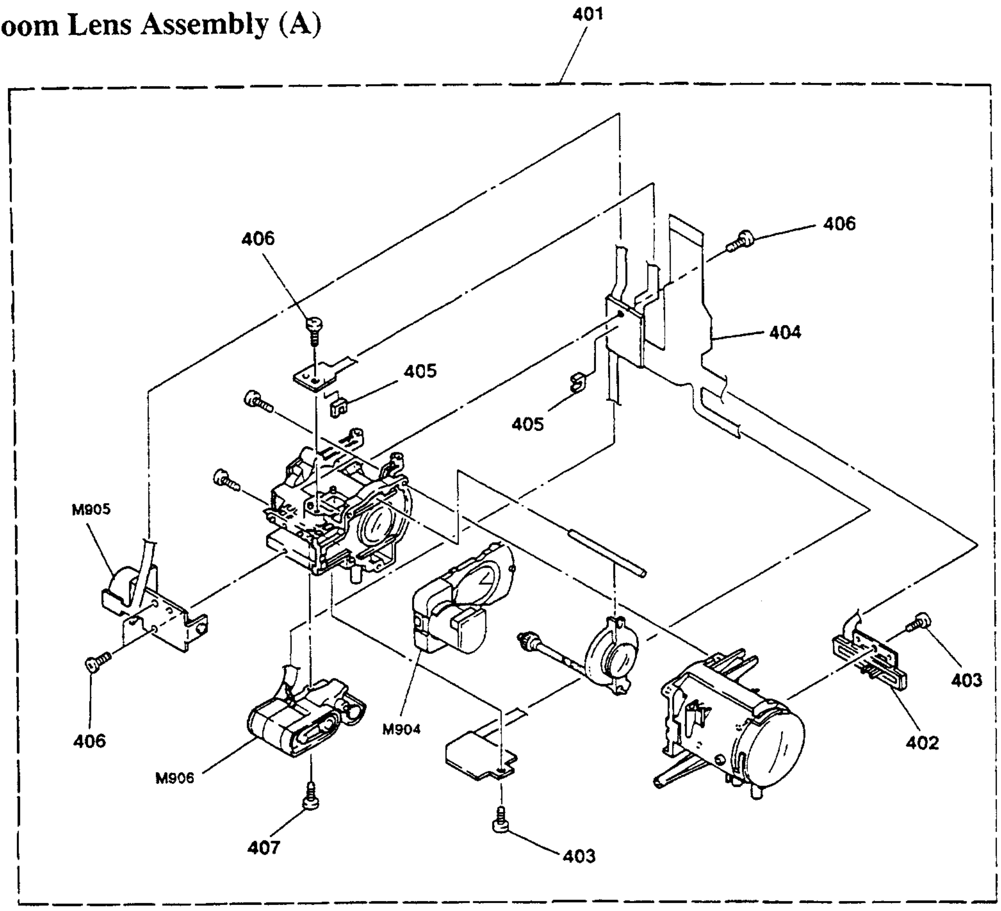
323

Optik (A) / Zoom Lens Assembly (A)

8


401
406
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405
M905
M904
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M906
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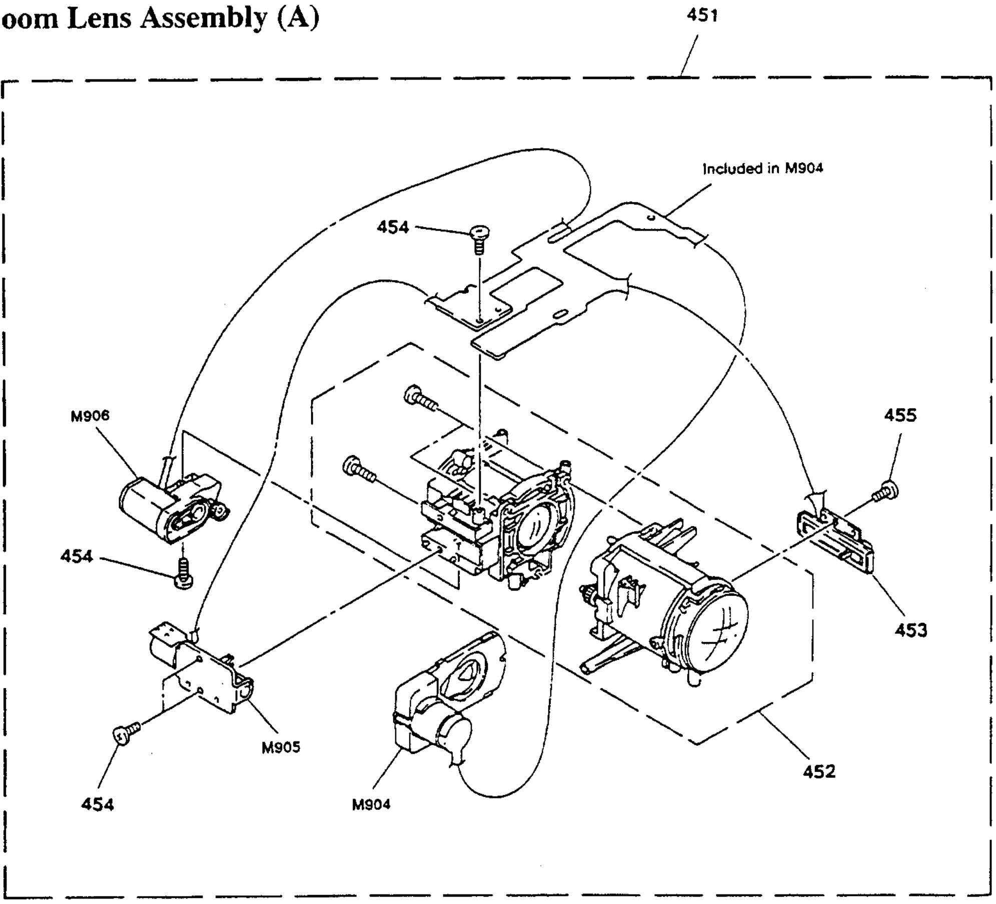
403

Optik (A) / Zoom Lens Assembly (A)

9


451
Included in M904
454
M906
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M905
454
M904

GRUNDIG Ersatzteilliste
Spare Parts List

LIVE CAM

Ⓓ Btx * 32700 #

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LC 435 E

SACH-NR. / PART NO.: 758600-1000
BESTELL-NR. / ORDER NO.: GMD 6100

POS. NR. POS. NO.	ABB. NR. FIG. NO.	SACHNUMMER PART NUMBER	ANZ. QUA.	BEZEICHNUNG Ⓓ	DESCRIPTION GB
0001.000	1	75981-324.03		GEHAEUSETEIL, LINKS	HOUSING PART, LEFT
0002.000	1	75981-322.10		HALTERIEMEN	GRIP BELT
0003.000	1	75987-535.22		DRUCKFEDER	PRESSURE SPRING
0004.000	1	75981-274.09		KNOPF, STAND-BY	KNOB, STAND-BY
0005.000	1	75987-535.25		FEDER	SPRING
0006.000	1	75981-302.82		FEDER	SPRING
0007.000	1	75981-274.10		HALTER	HOLDER
0008.000	1	75981-324.02		CASSETTENKLAPPE	CASS. COMP. LID
0012.000	1	75981-324.01		GEHAEUSEVORDERTEIL, RE.	CABINET FRONT, RIGHT
0014.000	1	75981-290.11		SCHENKELFEDER	LEG SPRING
0015.000	1	75981-290.10		MIKROFON	MICROPHONE UNIT
0018.000	1	75981-290.08		FLEXIBLE LEITUNG, FFC-90	FLEXIBLE CABLE, FCC-90
0019.000	1	75987-560.60		SCHRAUBE M2	SCREW M2
0055.000	2	75987-560.50		SCHRAUBE M2X6	SCREW M2X6
0057.000	2	75981-324.00		GEHAEUSETEIL, RECHTS	HOUSING PART, RIGHT
0059.000	2	75981-290.17		VERRIEGELUNG	LOCK BATTERY
0060.000	2	75981-290.20		KNOPF, BATTERIE	KNOB, BATTERY
0062.000	2	75981-324.04		ABDECKUNG	TRANSFORMER
0064.000	2	75981-324.06		FEDER	SPRING
0066.000	2	75981-290.19		DECKEL	LID
0074.000	2	75981-324.19		FOCUSIERUNGSPL., MF-214W	FOCUS PLATE
0076.000	2	75981-290.21		BATTERIEDECKEL, LITHIUM	BATTERY LID, LITHIUM
0077.000	2	75981-284.23		OKULAR	OCULAR
0078.000	2	75981-324.05		AUGENMUSCHEL	EYE CAP
0079.000	2	75987-562.40		SCHRAUBE M2X8	SCREW
0080.000	2	75981-324.20		GEHAEUSETEIL, MONITOR LI.	HOUSING PART,MONITOR LEFT
0081.000	2	75981-324.21		GEHAEUSETEIL, MONITOR RE.	HOUSING PART, MONITOR
0082.000	2	75981-284.24		MONITORPLATTE, VF-42P	VIEW FINDER BOARD, VF-42
0084.000	2	75981-322.34		ABDECKUNG	COVER
0085.000	2	75981-290.23		WIPPE	ROCKER
0087.000		75981-324.23		BEDIENPLATTE	CONTROL BOARD
0088.000	⚠	75987-536.06		BUCHSE (MIC)	SOCKET
0089.000	3	75981-290.39		KONTAKTPLATTE	CONTACT PLATE
0090.000	3	75987-581.31		BUCHSE (FERNBEDIENUNG)	SOCKET
0091.000	3	75987-526.75		HALTER-BATTERIE (H516)	HOLDER BATTERY
0100.000	3	75981-288.34		CCD-EINHEIT IC875	CCD - UNIT
0101.000	3 ⚠	75981-324.07		ANSCHLUSSPLATTE, DD-67	CONNECTION BOARD DD-67
0102.000	3	75987-562.39		SCHRAUBE M2X3	SCREW M2X3
0103.000	3	75981-302.73		S/S SCHALTERPLATTE,SW-223	START/STOP SWITCH BOARD
0105.000	3	75981-290.30		OPTIK KPL.	OPTIC CPL.
0106.000	3	75981-324.08		DAEMPFUNG, LINSE	DAMPING, LENS
0107.000	3	75981-322.65		ADAPTER	ADAPTER
0108.000	3	75981-282.71		IR-FILTER	IR-FILTER
0109.000	3	75981-330.62		GUMMI	RUBBER
0110.000	3	75981-324.09		PLL-PLATTE KPL. CD-116	PLL-PLATE CPL. CD-116
0115.000	3	75981-302.70		BATTERIEPLATTE, LI-46	LITHIUM BATTERY BOARD,
0116.000	3	75981-290.32		HALTER, LITHIUM	HOLDER, LITHIUM
0117.000	3	75981-324.10		CAMERAPLATTE, VC-147 PLL	CAMERA BOARD, VC-147 PLL
0118.000	3	75981-324.11		RECORDERPLATTE, VS-116	RECORDER BOARD, VS-1116
0121.000	3	75981-324.12		TONPLATTE, AU-171 KPL.	AUDIO BOARD AU-171 CPL.
0123.000	3	75981-324.13		FLACHKABEL, FFC-124	FLAT CABLE
0124.000	3	75981-324.14		KONTROLLPLATTE, SL-41 KPL	CONTROL PLATE SL-41 CPL
0125.000	3	75987-560.60		SCHRAUBE M2	SCREW M2
0151.000	4	75981-302.83		CASSETTENSCHACHT	CASSETTE COMPARTMENT
0152.000	4	75981-322.77		DREHSTANGE	BAR, TORSION
0153.000	4	75981-282.77		SCHENKELFEDER	LEG SPRING

POS. NR. POS. NO.	ABB. NR. FIG. NO.	SACHNUMMER PART NUMBER	ANZ. QUA.	BEZEICHNUNG (D)	DESCRIPTION (GB)
0154.000	4	75981-282.78		DAEMPFUNG	DAMPING OR ATTENUATION
0155.000	4	75987-527.43		SCHEIBE	WASHER
0157.000	4	75981-282.79		KOPFREINIGER KPL.	HEAD CLEANER CPL.
0158.000	4	75981-282.81		ZUGFEDER	TENSION SPRING
0159.000	4	75987-527.48		SCHEIBE	WASHER
0160.000	4	75981-282.82		KOPFREINIGERBUERSTE	HEAD CLEANER BRUSH
0161.000	4	75981-282.83		PLATTE	PLATE
0162.000	4	75981-322.78		DECKEL, CAPSTAN	COVER, CAPSTAN
0201.000	5	75981-282.84		WICKELTELLER	SPOOL CARRIER
0203.000	5	75981-302.78		ANDRUCKROLLE	PINCH ROLLER
0206.000	5	75981-282.86		UMLENKROLLE	PIVOTING ROLLER
0209.000	5	75981-282.87		HEBEL	LEVER
0210.000	5	75987-527.44		SCHEIBE	WASHER
0211.000	5	75981-282.88		ZAHNRAD	GEAR WHEEL
0212.000	5	75981-282.89		HEBEL	LEVER
0213.000	5	75987-552.84		SCHEIBE	WASHER
0214.000	5	75981-282.90		ZAHNRAD	GEAR WHEEL
0215.000	5	75981-322.81		STUETZE	SUPPORT
0216.000	5	75981-282.91		RIEGEL	LATCH,BOLT
0217.000	5	75981-324.15		WICKELTELLER	SPOOL CARRIER
0219.000	5	75981-282.93		SCHNUR	CORD
0220.000	5	75981-282.94		BREMSHEBEL	BRAKE LEVER
0221.000	5	75981-302.79		FEDER	SPRING
0222.000	5	75981-282.96		UMLENKBOLZEN	THREADING BOLT ASSEMBLY
0223.000	5	75981-282.97		SCHENKELFEDER	LEG SPRING
0224.000	5	75981-282.98		BREMSHEBEL	BRAKE LEVER
0226.000	5	75981-302.84		CHASSIS KPL., LS	CHASSIS CPL. LS
0227.000	5	75981-283.00		FUEHRUNG	GUIDE
0228.000	5	75981-283.01		UMLENKROLLE	PIVOTING ROLLER
0230.000	5	75981-283.02		HEBEL KPL.	LEVER
0231.000	5	75981-283.03		SCHIEBER	SLIDER
0251.000	6	75981-283.05		KOPFRAD	HEAD WHEEL
0252.000	6	75981-283.06		BLATTFEDER	LEAF SPRING
0253.000	6	75981-283.07		UMLENKHEBEL, TG7	REVERSE LEVER
0256.000	6	75981-283.08		HEBEL	LEVER
0257.000	6	75981-294.52		STECKER	PLUG
0259.000	6	75981-283.09		HEBEL	LEVER
0261.000	6	75981-283.10		BANDFUEHRUNGSBOLZEN	TAPE GUIDE PIN
0262.000	6	75981-324.16		DRUCKFEDER	PRESSURE SPRING
0263.000	6	75987-561.01		SCHRAUBE	SCREW
0301.000	7	75981-283.15		HEBEL	LEVER
0302.000	7	75987-562.48		SCHRAUBE	SCREW
0303.000	7	75981-283.16		HEBEL	LEVER
0304.000	7	75987-552.84		SCHEIBE	WASHER
0306.000	7	75981-283.17		HEBEL	LEVER
0307.000	7	75981-283.18		DRUCKFEDER	PRESSURE SPRING
0308.000	7	75981-283.19		ANTRIEBSRAD	DRIVE WHEEL
0309.000	7	75981-283.20		ANTRIEBSRIEMEN	DRIVE BELT
0310.000	7	75981-283.21		RIEMENSCHEIBE	BELT PULLEY
0311.000	7	75981-283.22		SCHIEBER	SLIDE
0312.000	7	75981-302.80		KURVENRAD	CURVED WHEEL
0313.000	7	75981-283.24		HEBEL	LEVER
0315.000	7	75981-283.25		GRUNDSCHASSIS	MAIN CHASSIS
0317.000	7	75981-283.26		HEBEL	LEVER
0318.000	7	75981-283.27		HEBEL	LEVER
0319.000	7	75981-283.28		ZAHNRAD	GEAR WHEEL
0320.000	7	75981-283.29		ZAHNRAD	GEAR WHEEL
0321.000	7	75981-302.81		FLEXIBLE PLATTE, FP-444	FLEXIBLE BOARD, FP-444
0322.000	7	75981-324.17		VERBINDUNG 10-P	CONNECTING 10-P
0324.000	7	75981-283.97		FLEXIBLE LEITUNG, FP-442	FLEXIBLE CABLE
0325.000	7	75981-322.90		FLEXIBLE PLATTE, FP-575	FLEXIBLE BOARD
0401.000	8	75981-290.30		OPTIK KPL.	OPTIC CPL.
0402.000	8	75981-284.45		SCHIEBEREGLER	SLIDING-CONTROL
0404.000	8	75981-324.18		FLEXIBLE PLATTE	FLEXIBLE PLATE
0405.000	8	75981-284.46		OPTOKOPPLER	OPTOCOUPLER
0452.000	9	75981-302.85		LINSENEINHEIT	LENS ASSY
0453.000	9	75981-302.86		SCHIEBEREGLER	SLIDING-CONTROL
0456.000		75981-324.22		STOPPER	STOPPER
0457.000		75981-322.36		HALTER, LED	HOLDER, LED
0459.000	6	75981-283.12		BANDTROMMEL KPL. M901	TAPE DRUM CPL.

POS. NR. POS. NO.	ABB. NR. FIG. NO.	SACHNUMMER PART NUMBER	ANZ. QUA.	BEZEICHNUNG (D)	DESCRIPTION (GB)
0460.000	6	75981-283.13		CAPSTAN-MOTOR M902	CAPSTAN MOTOR
0461.000	6	75981-283.14		FAEDELMOTOR M903	LOADING MOTOR
0462.000	8	75981-324.49		BLENDENEINHEIT M904	IRIS UNIT
0463.000	8	75981-290.48		MOTOR-FOCUS TYP A M905	MOTOR-FOCUS
0465.000	9	75981-302.87		BLENDENEINHEIT M904	IRIS UNIT
0466.000	9	75981-302.88		MOTOR-FOCUS TYP B M905	MOTOR-FOCUS
0467.000	9	75981-290.49		MOTOR-ZOOM TYP B M906	MOTOR-ZOOM
0468.000	8	75981-302.89		MOTOR-ZOOM TYP A M906	MOTOR-ZOOM
0469.000	2 ⚠	75987-563.17		SUCHER-MONITOR-ROEHRE V901	VIEW FINDER MONIT.PIC TUB
0470.000	3	75981-290.40		FLEXIBLE LEITUNG, FP-588 (W001)	FLEXIBLE CABLE, FP-588
0471.000	3	75981-290.41		FLEXIBLE LEITUNG, FP-572 (W405)	FLEXIBLE CABLE, FP-572
0472.000	2 ⚠	75987-521.12		SOCKEL, ROEHRE (W501)	SOCKET
0474.000	3	75981-290.43		FLEXIBLE LEITUNG, FFC-92 (W519)	FLEXIBLE CABLE, FFC-92
0475.000	3	75981-282.75		FLEXIBLE PLATTE, FP-437 (W521)	FLEXIBLE CABLE, FP-437
0476.000	3	75981-290.44		FLEXIBLE LEITUNG, FP-589 (W522)	FLEXIBLE CABLE, FP-589
0477.000	2	75981-290.24		FLEXIBLE LEITUNG, FCC-87 (W971)	FLEXIBLE CABLE, FCC-87
0478.000	2	75981-290.25		FLEXIBLE LEITUNG, FP-590 (W986)	FLEXIBLE CABLE, FP-590
0479.000	2	75981-290.26		FLEXIBLE LEITUNG, FP-591 (W987)	FLEXIBLE CABLE, FP-591
0480.000	2	75981-290.27		FLEXIBLE LEITUNG, FCC-86 (W991)	FLEXIBLE CABLE, FCC-86
				ZUBEHOER	**ACCESSORY**
	⚠	75987-527.90		ACCU BP 8-1	ACCU BP 8-1
	⚠	75981-281.51		NETZTEIL NA 8-3	POWER SUPPLY N8-3
		75981-324.29		ADAPTER	ADAPTER CONVERSION
		72010-516.05		BEDIENUNGSANLEITUNG GB/E	INSTRUCTION MANUAL
		72010-516.06		BEDIENUNGSANLEITUNG D/I	INSTRUCTION MANUAL
		72010-516.07		BEDIENUNGSANLEITUNG F/NL	INSTRUCTION MANUAL
		72010-516.08		BEDIENUNGSANLEITUNG S/P	INSTRUCTION MANUAL
		72010-516.45		SERVICE MANUAL	SERVICE MANUAL

POS. NR. POS. NO.	SACHNUMMER PART NUMBER	BEZEICHNUNG D DESCRIPTION GB
Q 902	75987-536.19	TRANS.2 SD 1615 A-GP
Q 903	75981-323.65	TRANS.2 SA 1163 G
Q 904	75981-323.64	TRANS.2 SC 1623 L5 L6
C 504 ⚠	75981-324.31	KONDENS.0,001UF 10% 50V
C 505 ⚠	75981-284.80	CHIP-KONDENS.0,0039UF 5%
C 506 ⚠	75981-290.79	CHIP-KONDENS.0.0068UF 5%
CF 151	75981-273.51	FILTER
CT 801	75987-559.14	TRIMMER
D 001	75981-294.60	DIODE GL 4600 S
D 121	75981-323.88	DIODE MA 142 WK-TX
D 152	75987-586.69	DIODE MA 142 WA
D 159	75981-323.88	DIODE MA 142 WK-TX
D 160	75981-323.88	DIODE MA 142 WK-TX
D 161	75987-458.27	DIODE MA 110
D 162	75981-323.88	DIODE MA 142 WK-TX
D 163	75981-323.88	DIODE MA 142 WK-TX
D 401 ⚠	75987-458.42	DIODE MA 728
D 402	75981-323.88	DIODE MA 142 WK-TX
D 403	75987-458.27	DIODE MA 110
D 456	75987-536.09	DIODE MA 8082 M
D 462	75987-536.09	DIODE MA 8082 M
D 501	75987-536.11	LE DIODE TLS 221
D 502	75981-273.55	LE DIODE BR 4371 F
D 503	75987-356.22	DIODE MA 152 WA (M0)
D 552	75987-458.27	DIODE MA 110
D 875	75987-525.86	DIODE 1 SS 226
D 876	75987-458.27	DIODE MA 110
D 877	75981-273.15	DIODE 1 SS 181
D 878	75987-458.27	DIODE MA 110
D 901	75987-559.68	DIODE FC 805
D 905	75987-458.27	DIODE MA 110
D 906	75987-458.27	DIODE MA 110
D 971	75987-458.27	DIODE MA 110
D 977	75987-536.09	DIODE MA 8082 M
D 978	75987-536.09	DIODE MA 8082 M
D 979	75987-536.09	DIODE MA 8082 M
D 980	75987-536.09	DIODE MA 8082 M
D 981	75987-536.09	DIODE MA 8082 M
D 992	75987-458.27	DIODE MA 110
FL 121	75987-525.13	FILTER 4.43MHZ
FL 152	75987-559.24	FILTER
FL 153	75987-525.12	FILTER 4.43MHZ
FL 154	75987-581.36	FILTER
FL 155	75987-559.23	FILTER
FL 401	75981-284.67	FILTER
FL 701	75987-581.48	FILTER
FL 702	75987-581.49	FILTER
H 001	75981-294.61	DIODE LT 140 SAZ
H 002	75981-294.61	DIODE LT 140 SAZ
IC 001	75987-526.26	IC CXA 1202 R
IC 003	75981-273.70	IC CXA 1211 M
IC 121	75987-526.45	IC CXA 1203 N
IC 151	75981-290.65	IC CXA 1207 AR
IC 152	75981-323.92	IC CXA 1208 R-T4
IC 154	75987-559.85	IC CXL 1506 M
IC 155	75981-273.70	IC CXA 1211 M
IC 156	75981-288.40	IC M 62353 GP
IC 158	75981-288.40	IC M 62353 GP

POS. NR. POS. NO.	SACHNUMMER PART NUMBER	BEZEICHNUNG D DESCRIPTION GB
IC 159	75981-273.93	IC CXA 1452N
IC 401 ⚠	75981-290.66	IC S 8420 AF
IC 402	75981-290.67	IC CXP 80624-428 R
IC 403	75981-324.33	IC UPD 75316 GF-463-3B9
IC 404	75981-290.69	IC CXA 1481 AR
IC 405	75981-290.70	IC BR 9011 BF-RE 2
IC 406	75981-290.71	IC UPD 6456 GS 620
IC 408	75981-323.94	IC CXA 1575 M-E2
IC 409	75987-560.11	IC TL 1596 CDB
IC 410	75981-290.72	IC MPC 1720 VM
IC 501	75987-526.44	IC AN 2512 S
IC 521	75981-283.82	IC LB 8111 V
IC 551	75987-553.58	IC LA 7293 M-TE-L
IC 601	75987-581.40	IC CXA 1488 R
IC 701	75952-041.79	IC TC 7 SU 04 F
IC 702	75981-284.69	IC MB 88346 BPFV
IC 703	75987-528.70	IC NJM 2234 M
IC 704	75981-294.68	IC CXD 2101 BR
IC 705	75981-283.57	IC CXD 2103 AR-T 6
IC 706	75981-290.57	IC CXD 2104 BN
IC 707	75981-284.70	IC CXD 2100 AQ
IC 709	75981-290.58	IC CXP 80624-434 R
IC 712	75981-324.25	IC BR 9021 BF
IC 801	75981-324.26	IC CXD 1257 AR
IC 802	75981-323.45	IC CXA 1577 R-T 4
IC 803	75981-273.71	IC CXA 1399Q
IC 804	75981-273.74	IC CXD 1250 N
IC 805	75981-273.73	IC CXA 1390 AR
IC 851	75981-323.44	IC NJM 3414 M
IC 852	75981-324.27	IC LM 324 DR
IC 853	75981-290.60	IC MPC 1724 VMEL
IC 854	75981-273.96	IC LB 1830 M
IC 856	75987-560.10	IC LM 358 D
IC 901	75981-283.76	IC MB 3785 APFV-G-BND-ER
L 001	75987-525.32	SPULE 10UH
L 002	75981-273.39	CHIP-SPULE 220UH
L 003	75981-273.39	CHIP-SPULE 220UH
L 005	75981-290.73	CHIP-SPULE 22UH
L 007	75987-533.10	CHIP SPULE 10UH
L 008	75987-521.31	CHIP SPULE 220UH
L 009	75987-525.31	SPULE 8.2UH
L 010	75987-535.98	CHIP SPULE 120 UH
L 011	75987-581.41	SPULE 330UH
L 012	75987-525.37	SPULE 33UH
L 013	75987-525.47	SPULE 180UH
L 015	75987-525.32	SPULE 10UH
L 121	75987-525.32	SPULE 10UH
L 150	75987-525.35	SPULE 18UH
L 152	75987-525.36	SPULE 22UH
L 154	75987-525.40	SPULE 56UH
L 155	75987-525.40	SPULE 56UH
L 160	75987-533.10	CHIP SPULE 10UH
L 161	75987-525.36	SPULE 22UH
L 162	75987-581.41	SPULE 330UH
L 163	75981-324.28	SPULE 820UH
L 164	75987-525.47	SPULE 180UH
L 169	75987-525.42	SPULE 82UH
L 170	75987-525.32	SPULE 10UH
L 171	75987-525.35	SPULE 18UH
L 175	75987-525.43	SPULE 100UH
L 176	75987-525.46	SPULE 150UH
L 177	75987-533.10	CHIP SPULE 10UH
L 178	75987-559.36	CHIP SPULE 47 UH
L 179	75987-559.30	CHIP SPULE 6,8 UH
L 180	75987-525.43	SPULE 100UH
L 181	75987-525.43	SPULE 100UH
L 182	75987-535.98	CHIP SPULE 120 UH
L 184	75987-533.39	CHIP SPULE 27 UH

POS. NR. POS. NO.	SACHNUMMER PART NUMBER	BEZEICHNUNG (D) DESCRIPTION (GB)
L 185	75987-533.10	CHIP SPULE 10UH
L 186	75987-559.35	SPULE 1 UH
L 401	75981-290.80	CHIP-SPULE 4,7UH
L 402	75987-533.10	CHIP SPULE 10UH
L 403	75987-559.36	CHIP SPULE 47 UH
L 404	75987-533.10	CHIP SPULE 10UH
L 405	75987-533.10	CHIP SPULE 10UH
L 406	75987-533.10	CHIP SPULE 10UH
L 407	75981-324.35	SPULE 1UH
L 501	75987-563.61	SPULE 33 UH
L 502	75981-323.63	CHIP SPULE 47UH
L 503 ⚠	75987-563.62	SPULE
L 571	75981-323.07	CHIP SPULE 1UH
L 572	75981-323.07	CHIP SPULE 1UH
L 601	75987-525.35	SPULE 18UH
L 701	75981-273.38	CHIP-SPULE 10UH
L 704	75981-273.38	CHIP-SPULE 10UH
L 706	75987-559.36	CHIP SPULE 47 UH
L 708	75981-273.44	SPULE 1UH
L 711	75987-533.10	CHIP SPULE 10UH
L 714	75981-273.38	CHIP-SPULE 10UH
L 715	75987-533.10	CHIP SPULE 10UH
L 717	75987-533.10	CHIP SPULE 10UH
L 720	75981-273.38	CHIP-SPULE 10UH
L 721	75987-525.42	SPULE 82UH
L 801	75987-525.50	SPULE 10UH
L 802	75981-273.38	CHIP-SPULE 10UH
L 803	75987-533.10	CHIP SPULE 10UH
L 804	75987-533.10	CHIP SPULE 10UH
L 851	75987-533.10	CHIP SPULE 10UH
L 853	75987-525.51	SPULE 47UH
L 875	75981-273.16	CHIP-SPULE 100UH
L 903	75981-273.22	SPULE 10UH
L 904	75981-273.22	SPULE 10UH
L 905	75981-273.22	SPULE 10UH
L 906	75981-273.23	SPULE 22UH
L 909	75981-273.21	CHIP-SPULE 4.7UH
L 910	75981-273.21	CHIP-SPULE 4.7UH
L 911	75981-273.21	CHIP-SPULE 4.7UH
L 912	75981-273.20	SPULE 47UH
L 913	75981-273.20	SPULE 47UH
L 914	75981-283.78	CHIP-SPULE 330UH
L 915	75981-283.78	CHIP-SPULE 330UH
L 916	75981-273.21	CHIP-SPULE 4.7UH
PS 401 ⚠	75981-324.36	SICHERUNG 0,4 A
PS 402 ⚠	75981-273.47	SICHERUNG 0,8A
PS 901 ⚠	75987-525.61	SICHERUNG PRF1600
PS 902 ⚠	75987-559.51	SICHERUNG 1.6A
Q 001	75987-526.03	TRANS.2 SA 1162
Q 003	75981-290.54	TRANS.2 SA 1586 YG
Q 008	75981-279.92	TRANS.2 SD 1819 AR
Q 010	75987-459.49	TRANS.-WIDERST.UN 5113
Q 019	75981-323.64	TRANS.2 SC 1623 L5 L6
Q 020	75981-323.64	TRANS.2 SC 1623 L5 L6
Q 021	75987-434.50	TRANS.2 SA 1576 QR
Q 022	75981-290.54	TRANS.2 SA 1586 YG
Q 024	75981-330.14	TRANS.2 SC 2223 F 13
Q 025	75981-290.74	TRANS.RN 2302
Q 026	75981-279.92	TRANS.2 SD 1819 AR
Q 121	75987-459.49	TRANS.-WIDERST.UN 5113
Q 123	75987-459.47	TRANS.-WIDERST.UN 5213
Q 124	75987-459.49	TRANS.-WIDERST.UN 5113
Q 125	75981-273.56	TRANS.2 SC 4178
Q 126	75981-279.92	TRANS.2 SD 1819 AR
Q 151	75981-330.13	TRANS.2 SB 798 DL
Q 152	75981-279.92	TRANS.2 SD 1819 AR

POS. NR. POS. NO.	SACHNUMMER PART NUMBER	BEZEICHNUNG (D) DESCRIPTION (GB)
Q 154	75981-279.92	TRANS.2 SD 1819 AR
Q 158	75981-279.92	TRANS.2 SD 1819 AR
Q 160	75987-459.49	TRANS.-WIDERST.UN 5113
Q 161	75981-279.92	TRANS.2 SD 1819 AR
Q 162	75987-459.49	TRANS.-WIDERST.UN 5113
Q 166	75981-290.54	TRANS.2 SA 1586 YG
Q 168	75987-459.49	TRANS.-WIDERST.UN 5113
Q 170	75987-528.81	TRANS.XN 4312
Q 171	75981-273.56	TRANS.2 SC 4178
Q 175	75981-279.92	TRANS.2 SD 1819 AR
Q 176	75981-279.92	TRANS.2 SD 1819 AR
Q 177	75981-290.54	TRANS.2 SA 1586 YG
Q 178	75981-290.54	TRANS.2 SA 1586 YG
Q 180	75987-459.48	TRANS.-WIDERST.XN 4215
Q 182	75981-279.92	TRANS.2 SD 1819 AR
Q 183	75987-459.56	TRANS.-WIDERST.UN 5115
Q 184	75981-279.92	TRANS.2 SD 1819 AR
Q 189	75981-279.92	TRANS.2 SD 1819 AR
Q 191	75981-279.92	TRANS.2 SD 1819 AR
Q 192	75981-279.92	TRANS.2 SD 1819 AR
Q 194	75981-279.92	TRANS.2 SD 1819 AR
Q 195	75981-290.54	TRANS.2 SA 1586 YG
Q 196	75987-459.49	TRANS.-WIDERST.UN 5113
Q 199	75987-533.46	TRANS.2 SB 1295 UL 6
Q 200	75981-290.62	TRANS.RN 1302
Q 203	75987-459.49	TRANS.-WIDERST.UN 5113
Q 204	75981-279.92	TRANS.2 SD 1819 AR
Q 205	75987-459.47	TRANS.-WIDERST.UN 5213
Q 207	75987-459.49	TRANS.-WIDERST.UN 5113
Q 208	75981-290.62	TRANS.RN 1302
Q 210	75987-459.47	TRANS.-WIDERST.UN 5213
Q 212	75981-290.54	TRANS.2 SA 1586 YG
Q 214	75987-536.22	TRANS.XN 4213
Q 219	75981-297.36	TRANS.2 SA 1677
Q 220	75987-459.51	TRANS.-WIDERST.UN 5212
Q 221	75987-536.22	TRANS.XN 4213
Q 222	75981-279.92	TRANS.2 SD 1819 AR
Q 223	75987-459.47	TRANS.-WIDERST.UN 5213
Q 226	75987-459.49	TRANS.-WIDERST.UN 5113
Q 229	75981-290.54	TRANS.2 SA 1586 YG
Q 230	75981-279.92	TRANS.2 SD 1819 AR
Q 231	75981-290.54	TRANS.2 SA 1586 YG
Q 232	75981-279.92	TRANS.2 SD 1819 AR
Q 233	75981-279.92	TRANS.2 SD 1819 AR
Q 234	75981-290.54	TRANS.2 SA 1586 YG
Q 236	75981-290.75	TRANS.UN 511 E
Q 237	75981-290.54	TRANS.2 SA 1586 YG
Q 401	75987-459.59	TRANS.-WIDERST.UN 521 E
Q 405	75981-290.62	TRANS.RN 1302
Q 409	75981-290.76	TRANS.2 SB 1574
Q 501	75981-323.64	TRANS.2 SC 1623 L5L6
Q 502	75981-323.65	TRANS.2 SA 1163 G
Q 504	75987-536.19	TRANS.2 SD 1615 AGP
Q 521	75987-480.69	TRANS.-WIDERST.XN 4501
Q 551	75981-290.54	TRANS.2 SA 1586 YG
Q 701	75981-273.68	TRANS.DTC 124 EE
Q 702	75981-323.72	TRANS.XP 4601
Q 703	75981-323.72	TRANS.XP 4601
Q 704	75981-290.61	TRANS.2 SB 1462 Q
Q 706	75981-290.50	TRANS.2 SD 2216 Q
Q 707	75987-550.88	TRANS.-WIDERST.UN 9111
Q 708	75981-290.50	TRANS.2 SD 2216 Q
Q 709	75987-551.70	TRANS.XP 4501
Q 801	75981-290.50	TRANS.2 SD 2216 Q
Q 802	75987-551.69	TRANS.XP 4401
Q 851	75981-290.50	TRANS.2 SD 2216 Q
Q 852	75981-290.62	TRANS.RN 1302
Q 853	75987-551.69	TRANS.XP 4401
Q 875	75981-290.50	TRANS.2 SD 2216 Q
Q 876	75987-551.70	TRANS.XP 4501
Q 877	75981-273.18	TRANS.2 SK 1875 B[illegible]TE 85

POS. NR. POS. NO.	SACHNUMMER PART NUMBER	BEZEICHNUNG Ⓓ DESCRIPTION ⒼⒷ
Q 901	75987-480.68	TRANS.-WIDERST.XN 4401
Q 902	75987-459.47	TRANS.-WIDERST.UN 5213
Q 903	75981-273.27	TRANS.FP 102
Q 904	75987-573.81	TRANS.2 SB 1122-S
Q 905	75981-273.24	TRANS.FP 101
Q 906	75981-273.24	TRANS.FP 101
Q 907	75987-480.69	TRANS.-WIDERST.XN 4501
Q 908	75987-526.06	TRANS.2 SB 1121
Q 909	75987-526.06	TRANS.2 SB 1121
Q 910	75987-459.49	TRANS.-WIDERST.UN 5113
R 073	75981-302.58	THERMISTOR, NTC
R 113	75981-273.54	THERMISTOR
RB 401	75981-324.41	WIDERST.330KOHM
RB 402	75981-324.42	WIDERST.100KOHM
RB 403	75981-324.42	WIDERST.100KOHM
RB 404	75981-324.43	WIDERST.10KOHM
RB 405	75981-324.44	WIDERST.100KOHM
RB 406	75981-324.43	WIDERST.10KOHM
RB 407	75981-324.42	WIDERST.100KOHM
RB 408	75981-324.43	WIDERST.10KOHM
RB 409	75981-324.45	WIDERST.1KOHM
RB 410	75981-323.58	SICHERHEITSBLOCK 1.0K
RB 411	75981-323.29	WIDERST.10 KOHM
RB 414	75981-324.45	WIDERST.1KOHM
RB 416	75981-323.58	SICHERHEITSBLOCK 1.0K
RB 418	75981-330.22	SICHERHEITSBLOCK 470 OHM
RB 421	75981-324.43	WIDERST.10KOHM
RB 422	75981-323.29	WIDERST.10 KOHM
RB 423	75981-323.29	WIDERST.10 KOHM
RB 424	75981-323.29	WIDERST.10 KOHM
RB 425	75981-323.29	WIDERST.10 KOHM
RB 426	75981-323.58	SICHERHEITSBLOCK 1.0K
RB 521	75981-323.29	WIDERST.10 KOHM
RB 522	75981-323.29	WIDERST.10 KOHM
RB 701	75981-324.47	WIDERST.4,7KOHM
RB 702	75981-324.24	WIDERST.47KOHM
RB 703	75981-323.58	SICHERHEITSBLOCK 1.0K
RB 704	75981-324.46	WIDERST.2,2KOHM
RB 705	75981-324.46	WIDERST.2,2KOHM
RB 706	75981-323.58	SICHERHEITSBLOCK 1.0K
RB 707	75981-323.58	SICHERHEITSBLOCK 1.0K
RB 708	75981-323.58	SICHERHEITSBLOCK 1.0K
RV 151	75987-535.86	ESTR.1 KOHM
RV 501	75981-284.81	ESTR.47 KOHM
RV 502	75981-284.82	ESTR.470 OHM
RV 503	75981-284.83	ESTR.2,2 KOHM
RV 504	75987-563.64	ESTR.1 MOHM
S 001	75981-283.31	SCHALTER, ENCODER
S 002	75981-283.04	SCHALTER, REC, PROOF
S 005	75981-283.32	SCHALTER,C, DOWN
S 519	75987-559.52	SCHALTER,STAND BY
S 520	75987-525.72	SCHALTER, START/STOP
S 901	75981-323.17	SCHALTER, EJECT
S 973	75981-323.17	SCHALTER, LINSE,OPEN/CLOSE

POS. NR. POS. NO.	SACHNUMMER PART NUMBER	BEZEICHNUNG Ⓓ DESCRIPTION ⒼⒷ
S 976	75981-283.93	SCHALTER, STOP
S 979	75981-283.93	SCHALTER, REW
S 980	75981-283.93	SCHALTER, PLAY
S 983	75981-283.93	SCHALTER, FF
S 984	75981-283.93	SCHALTER, PAUSE
S 993	75981-283.69	SCHALTER, C, DATE
S 995	75981-283.69	SCHALTER, COUNTER, RESET
S 996	75981-283.69	SCHALTER, TIME, NEXT
S 997	75981-290.51	SCHALTER, POWER
T 501 ⚠	75987-563.65	TRAFO
T 901	75981-283.80	TRANSFORMER
TH 501	75981-273.54	THERMISTOR
X 151	75981-273.48	QUARZ
X 401	75981-284.77	QUARZ 4,19 MHZ
X 402	75987-563.56	QUARZ 32,768 KHZ
X 403	75981-273.49	QUARZ
X 701	75981-283.68	QUARZ 10 MHZ
X 801	75981-290.78	QUARZ 28,375 MHZ

Es gelten die Vorschriften und Sicherheitshinweise gemäß dem Service Manual "Sicherheit", Sach-Nummer 72010-800.00, sowie zusätzlich die eventuell abweichenden, landesspezifischen Vorschriften!

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The regulations and safety instructions shall be valid as provided by the "Safety" Service Manual, part number 72010-800.00, as well as the respective national deviations.